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No. OFFICE OF THE CLERK

In The

Supreme Court of the United States

October Term, 1996

AMERTEX ENTERPRISES, LTD.,

Petitioner,

vs.

THE UNITED STATES OF AMERICA,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

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213 pp

QUESTIONS PRESENTED FOR REVIEW

On a contract with the United States, is the contractor deprived of its right to sue for breach damages by agreeing to continue performing the contract despite the United States breach by cardinally changing the contract from a mass-production contract to a research and development contract where:

1. The agreement to continue performance contains no language which can be interpreted as a waiver of accrued breach damages;

2. The United States was in no way prejudiced by the contractor's election to continue performance; and

3. The United States was aware that a claim for those damages would be presented?

LIST OF PARTIES

The names of all parties to the proceedings in the Court whose judgment is sought to be reviewed here appears in the caption of the case. There is no parent or subsidiary company of any party to be listed.

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Petitioner, Amertex Enterprises, Ltd. ("Amertex"), requests that a Writ of Certiorari issue to review the Judgment and Opinion of the United States Court of Appeals for the Federal Circuit entered in this action on February 24, 1997 (Petition For Combined Petition For Rehearing And Suggestion For Rehearing *In Banc* denied by Order entered on May 2, 1997), which affirmed a Final Judgment of The United States Court of Federal Claims.

OPINIONS BELOW

The Opinion of the Court of Appeals (Petitioner's Appendix, Page 3) is not reported. It has been designated as "not citable as precedent". The Opinion of the United States Court of Federal Claims (Petitioner's Appendix, p. 14a) is unreported.

STATEMENT OF JURISDICTION

The Opinion of the Court of Appeals (Petitioner's Appendix, Page 3) was entered on February 24, 1997. A timely Combined Petition For Rehearing And Suggestion For Rehearing *In Banc* was denied on May 2, 1997. (Petitioner's Appendix, p. 191a). The Court has jurisdiction pursuant to 28 U.S.C. § 1254(1).

STATEMENT OF THE CASE

The case involves the issue of whether a Government contractor loses its right to sue for breach damages already accrued, when it agrees to continue performance despite the Government's breach. It arises under the Contract Disputes Act of 1978, 41 U.S.C. § 601, *et seq.* Petitioner, Amertex Enterprises, Ltd. ("Amertex"), at the time a participant in the Small Business Administration 8(a) program for "economically and socially disadvantaged" contractors, was awarded Contract No. DLA100-85-C-0402 on February 25, 1985, for 2,415,885 Chemical

Protective Suits at a firm fixed price of $39.88 each, for a total of $96.35 million. The contractual delivery schedule called for deliveries of some 200,000 units per month ending in January, 1987.

By the end of 1988 (nearly two years after the Contract should have been completed), as a result of what the Court of Federal Claims ("the COFC") found to be defective Government-provided specifications, as well as numerous Government-initiated specification changes, Amertex had delivered approximately 1.1 million of the 2.4 million Chemical Protective Suits. According to the COFC, as a result of the Government's failure to properly test the specification prior to issuing the underlying solicitation, the numerous changes and corrections were necessary in order for the applicable specifications to be suitable for mass production, to the point where the Contract, again according to the COFC, became, "at least in part, a research and development contract".[1]

Following a Default Termination of the Contract on January 6, 1989, Amertex filed several claims, including a breach of contract claim, founded on the doctrine of cardinal change, *i.e.*, that the Government had materially altered the fundamental contractual undertaking, by turning the fixed-price production contract on which Amertex had bid into a research and development vehicle.

Despite its finding that the contract had become, due to

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1. Unbeknownst to Amertex, for classified reasons under code name "Operation Cement Elephant", the Government rushed the specification through the development process, so that the normal testing procedures were not followed. As a result, what the COFC found to be untested and flawed specification were incorporated, without warning or disclaimer, into the largest mass production contract the agency (the Defense Logistics Agency/Defense Personnel Support Center) had ever awarded.

Government actions, "at least in part a research and development contract", the COFC rejected Amertex' Claim of Cardinal Change/Breach. According to the COFC, Amertex' "potentially convincing" claim was "fatally undercut" by its August, 1988 (five months before the Default Termination and three and one-half years after award) execution of a bilateral Modification (*i.e.*, P00037) incorporating a new delivery schedule and altering the method of payment from progress payments to payment upon delivery. The total dollar amount of the contract remained unchanged. The COFC neither explained its reasoning nor offered any case citations in support of this critical holding.

The Court of Appeals of the Federal Circuit ("the Federal Circuit"), through its deciding panel (in a 2-1 decision), affirmed the decision of the COFC, holding that Amertex' signing of the Modification incorporating a new delivery schedule was an "implicit" agreement by Amertex to perform the modified contract, thereby operating as a waiver of the right to assert a breach claim for damages already accrued. The Modification, however, in question contained no waiver or release language and was negotiated with knowledge by all parties that Amertex would be submitting a claim for damages already accrued.[2] Like the COFC, the panel cited no law, regulation or case decision supporting its holding. The dissent asserted that absent an express waiver in the Modification, Amertex' claim could not

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2. Specifically, the Modification in question, P00037, contained a caveat, which read as follows:

> It is agreed further that the execution of this modification will not be construed by either party as an endorsement by either party of any negotiation position with respect to the settlement of modifications P00001 and P00002.

(Petitioner's Appendix, p. 190a).

be held to have been waived, citing, *inter alia*, *Laka Tool & Stamping Co. v. The United States*, 639 F.2d 738, 743 (Ct. Cl. 1980), *cert. denied*, 454 U.S. 1086 (1981); *Cities Service Helex, Inc. v. The United States*, 543 F.2d 1306, 1313 (Ct. Cl. 1976); and *Allied Materials and Equipment Co. v. The United States*, 569 F.2d 562, 563-64 (Ct. Cl. 1978).

REASONS FOR GRANTING THE WRIT

I.

THE FEDERAL CIRCUIT DECISION HAS SO FAR DEPARTED FROM THE ACCEPTED AND USUAL COURSE OF JUDICIAL PROCEEDINGS AND SANCTIONED SUCH A COURSE BY THE UNITED STATES COURT OF FEDERAL CLAIMS AS TO CALL FOR AN EXERCISE OF THIS COURT'S POWER OF SUPERVISION.

The COFC held that Amertex deprived itself of the right to claim breach damages attributable to an acknowledged cardinal change when it agreed to continue performance. Specifically, the COFC held as follows:

> Notwithstanding the evidence supporting Plaintiff's plausible and potentially convincing cardinal change assertion, Plaintiff's position on this issue is fatally undercut by the bilateral modification made to the delivery schedule in 1988.

(Petitioner's Appendix, pp. 146a-147a).

This holding, unsupported by citation of law, was adopted by the Court of Appeals. The Modification alluded to contained

no waiver language[3] and did not change the total contract price. (Petitioner's Appendix, p. 190a).

The Decision of the Court of Appeals to uphold and endorse the concept of "implicit waiver" is a radical departure from Federal Case law, as enunciated both by this Court and the courts of other circuits.

As early as 1875, this Court reasoned, in *Phillips, Etc., Construction Company v. Seymour et al.*, 91 U.S. 646, 651:

> . . . if A. agree to deliver a horse, buggy, and harness on Monday, and B. accepts delivery of the horse and buggy, can he refuse to pay any thing, though he accepts delivery of the harness on Tuesday? This is absurd. He waives, by this acceptance, the point of time as to the harness, at least so far as A.'s right to recover the agreed sum is concerned. If B. have suffered any damage by the delay, he can recover it by an action on A.'s covenant to deliver on Monday; . . .

The Court went on to point out that the contractor, plaintiff in error Phillips, did not "waive its right to damage", but waived only its right to "forfeiture". 91 U.S. 646 at 652.

So basic is the concept that one does not renounce his right to damages when, after breach, he continues to perform, that it can be found in the most elementary treatises on contract law. For instance, West Publishing Company, in its Hornbook series on Contracts, instructs the reader:

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3. Actually, it contained a saving clause. *See* Footnote 1, *supra*. Thus, rather than "implicitly" waiving its damage claims, Amertex explicitly preserved them.

> If the breach is material, the aggrieved party may cancel the contract. He may sue also for a total breach if he can show that he would have been ready, willing and able to perform but for the breach. However, *he also has the option* of continuing with the contract and sue for a partial breach.

Contracts, Calamari and Perillo, 3rd Edition, at Page 458; emphasis supplied.

Likewise, the widely accepted *American Jurisprudence* states the following on the issue:

> Where there has been a material breach, the injured party has an election of continuing performance, or of ceasing to perform, or of repudiating the contract. Any act by the injured party indicating an intent to continue will operate as a conclusive election, *not depriving him of his right of action for the breach which has already taken place,* but depriving him of any excuse for ceasing performance on his own part.

17A Am. Jur. 2d (Revised), Contracts § 731; emphasis supplied.

The court below's predecessor, the United States Court of Claims, whose precedents are meant to be binding on the Federal Circuit, came to the same conclusion two decades ago in *Cities Service Helex v. The United States,* 543 F.2d 1306 (Ct. Cl. 1976) (The case, cited by the dissenting Judge in the instant case, was ignored in the majority opinion). In *Cities Service Helex, supra,* the court, citing the *Restatement, Williston, Corbin* and *The Uniform Commercial Code,* among others, reiterated what this

Court had held in *Phillips, Etc., Construction Company, supra, i.e.*, one does not forfeit a claim for breach damages by agreeing to continue performance. The United States Court of Claims reasoned as follows:

> A material breach does not automatically and *ipso facto* end a contract. It merely gives the injured party the right to end the agreement; the injured party can choose between canceling the contract and continuing it. If he decides to close the contract and so conducts himself, both parties are relieved of their further obligations and the injured party is entitled to damages to the end of the contract term (to put him in the position he would have occupied if the contract had been completed). *If he elects instead to continue the contract, the obligations of both parties remain in force and the injured party may retain only a claim for damages for partial breach.* See generally 5 S. Williston, Contracts §§ 638-88 (3d ed. W. Jaeger 1961); Restatement of Contracts §§ 317, 309-10 (1932); 17 Am.Jur.2d Contracts §§ 446-47, 489, 503, 510 (1964); *Acme Process Equip. Co. v. United States*, 171 Ct.Cl. 324, 334-37, 347 F.2d 509, 515-16 (1965), rev'd on other grounds, 385 U.S. 138 (1966); *Airco, Inc. v. United States*, 205 Ct.Cl. 493, 497-99, 504 F.2d 1133, 1135-37 (1974); *DeVito v. United States*, 188 Ct.Cl. 979, 990-991, 413 F.2d 1147, 1153-54 (1969); *Ling-Temco-Vought, Inc. v. United States*, 201 Ct.Cl. 135, 144-50. 475 F.2d 630, 636-39 (1973); *Northern Helex Co. v. United*

States, 197 Ct.Cl. 118, 125-26, 455 F.2d 546, 551 (1972).

* * *

. . . [S]ome courts and commentators and the Uniform Commercial Code have modified various aspects of this strict view. In *Northern Helex Co. v. United States*, 197 Ct.Cl. 118, 455 F.2d 546 (1972), the court adopted the position that the injured party may itself continue performance in certain circumstances and yet reserve its right to claim material breach without the breaching party's assent. *Id.* at 129-30, 455 F.2d at 553; see Uniform Commercial Code § 1-207. Some courts have shared Professor Corbin's view that an election should not be conclusive unless facts giving rise to an estoppel exist; either the breaching party must have changed his position in reliance on the injured party's failure to cancel or the injured party's conduct must be such that it would be unjust to allow him to change his position. 5A A. Corbin, Contracts § 1220 (1964); *Western Transmission Corp. v. Colorado Mainline, Inc.*, 376 F.2d 470, 472 (10th Cir. 1967); see *United States v. Chichester*, 312 F.2d 275, 282 (9th Cir. 1963); 5 S. Williston, *supra*, § 686, at 289-91; *cf. Ling-Temco-Vought, Inc. v. United States, supra* at 145-46, 475 F.2d at 636-37 (court stressed extra expense incurred by Government); *DeVito v. United States, supra* (elements of waiver of default in delivery include reliance and continued

> performance of delinquent party). The authors of the Uniform Commercial Code has also rejected the mechanical application of the doctrine of election of remedies: "Whether the pursuit of one remedy bars another depends entirely on the facts of the individual case". Uniform Commercial Code § 2-703, Comment 1.

543 F.2d at Pages 1313-1314; emphasis supplied.

In addition to overlooking the tenets of this Court, learned treatises, and its own decisions, the court below overlooked the law as pronounced by other Circuit Courts of Appeals. *See* II, *infra.*

II.

THE FEDERAL CIRCUIT'S OPINION DIRECTLY CONFLICTS WITH NUMEROUS DECISIONS IN VARIOUS CIRCUITS, WHICH, BASED ON MODERN VIEWS OF CONTRACT LAW, HOLD THAT A NON-BREACHING PARTY TO A CONTRACT DOES NOT LOSE ITS RIGHT TO SUE FOR BREACH DAMAGES BY FAILING TO END THE CONTRACT AND AGREEING TO CONTINUE PERFORMANCE.

The Decision below is in direct conflict with the following decisions from other Circuits: *Sitlington v. Fulton,* 281 F.2d 552 (10th Cir. 1960); *First Citizens Federal Savings and Loan Association v. Worthen Bank and Trust Company, NA,* 919 F.2d 510 (9th Cir. 1990); *Dunkin' Donuts of America, Inc. v. Minerva, Inc.,* 950 F.2d 1566 (11th Cir. 1992). *Havoco v. Hilco,* 799 F.2d 349, *on remand, Havoco of America Ltd. v. Hilco, Inc.,* 750 F. Supp. 946, *affirmed,* 971 F.2d 1332 (7th Cir. 1986); *Fuller*

Company v. Brown Minneapolis Tank and Fabricating Company, 678 F. Supp. 506 (E.D. Pa. 1987); *S. Leo Harmony, Inc. v. Binks Manufacturing Company,* 597 F. Supp. 1014 (S.D.N.Y. 1984).

The Tenth Circuit, in *Sitlington, supra,* held that the non-breaching party to a contract for the sale of property (in this instance, the buyer) had a choice upon the other party's (*i.e.*, the seller's) breach: (1) Rescind the contract and sue for breach; or (2) Require performance, retaining a cause of action for damages.

According to the Tenth Circuit:

> Any act by the injured party indicating an intent to continue performance is deemed a conclusive election. But by the election to continue performance he does not forego his right of action to recover damages caused by the breach. [citing, *inter alia, Williston on Contracts,* 2nd Edition § 1334 at Page 3749].

The Eleventh Circuit, in *Dunkin' Donuts of America, Inc. v. Minerva, supra,* was faced with a suit arising out of a franchise agreement, where the franchisee continued in performance after a breach. The majority held that under Arizona law, the franchisee still had the right to maintain an action for partial breach; the dissent argued that the franchisee's right was to sue for total breach.

In *First Citizens' Federal Savings and Loan Association v. Worthen Bank and Trust Company, supra,* the Ninth Circuit held that a non-breaching party, when faced with a material breach by the other party may elect to rescind the contract or may opt for performance and a right of action for damages.

The Seventh Circuit also recognizes the innocent party's right to continue performance without waiving its right to sue for damages. In *Havoco v. Hilco, supra,* the court's opinion stated the principle thusly:

> It is clear that under Illinois law, a waiver can be implied from conduct [citations omitted]. It is also clear that an essential element of waiver is that the injured party intended to affirm the contract and intended to abandon his right to recover damages. [citations omitted]. "If the intention to waive is implied from conduct, the conduct should speak the intention clearly". *Barkers Trust Company v. Pacific Employees Insurance Company,* 288 F.2d 106, 111 (9th Cir., 1960).
> . . .

799 F.2d at 353-354.

Both the Third and Second Circuits have taken the same position, enunciated in District Court decisions. Of special interest is the decision by the Eastern District of Pennsylvania (Third Circuit), in *Fuller Company v. Brown Minneapolis Tank and Fabricating Company, supra.* The court held that a party who continues to perform on a cardinally-changed contract loses the right to cease performance; its remedy is limited to a claim for damages. 678 F. Supp. at 509-510.

The District Court for the Southern District of New York (Second Circuit) held, in *S. Leo Harmony, Inc. v. Binks Manufacturing Company, supra,* that the non-breaching party to a contract could elect not to abandon performance, complete the contract and sue for damages traceable to the defendant's breach.

III.

THE WRIT SHOULD BE GRANTED BECAUSE THE CASE IS AN IMPORTANT ONE OVER AND ABOVE ITS CONFLICT WITH OTHER CIRCUITS AND WELL-SETTLED LAW.

By labeling its Decision as non-precedential, when, as noted in the dissent, *stare decisis* was to the contrary, the court below crafted a special, secret law for a socially and economically-disadvantaged company. The effect is not unlike the effect of Caligula's law. (That Roman Emperor was fond of placing his edicts high on the public pillars where they could not be read, and then enforcing the edicts selectively). The suggestion that there can be unstated agreements in written modifications, whether they involve contractor claims or interpretation of contract provisions, is so sweeping and fraught with peril that it takes on equal protection and due process aspects.

Although Amertex was granted a forum in which it could be heard, it was denied the benefit of a nationally accepted, deciding principle available to others and upon which it had a right to rely, *i.e.*, a contractor does not lose its right to claim breach damages when it agrees to continue performance. Certainly, if the majority decision is well-grounded in law, is holding (*i.e.* that a bilateral modification extending the delivery schedule implicit[ly] carries with a waiver of the right to breach of contract damages) is of considerable importance to the Government Contract legal community as Petitioner submits, it is and certainly precedential value. If, as Petitioner submits, it is not well-grounded in law, then the decision amounts to singling out this Government contractor unconstitutionally by adopting a rule that applies only to it.

CONCLUSION

The Writ should be granted. It is now undisputed that Amertex and its bank subsidized research and development for a contract falsely awarded under the guise of being a mass-production contract, supported by design specifications. In deciding the case, the court below has overlooked its own decisions, misapprehended the established law of "election of remedies", and brought itself into conflict with principles applied and cases decided by other circuits and its own precedent when it concluded that continued performance waives accrued breach damages.

Respectfully submitted,

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APPENDIX A — DECISION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DECIDED FEBRUARY 24, 1997

NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition is not citable as precedent. It is a public record. The disposition will appear in tables published periodically.

United States Court of Appeals for the Federal Circuit

96-5070

AMERTEX ENTERPRISES, LTD.,

Plaintiff-Appellant,

v.

THE UNITED STATES,

Defendant-Appellee.

DECIDED: February 24, 1997

Before NEWMAN, MICHEL and SCHALL, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* MICHEL. Dissenting opinion filed by *Circuit Judge* NEWMAN.

MICHEL, *Circuit Judge*.

Amertex Enterprises, Ltd. ("Amertex") appeals the consolidated, post-trial decision of December 15, 1995 of the Court of Federal Claims, Nos. 90-684, 91-1700, and 92-402,

denying its claim for cardinal change breach of a contract, granting its claim for an equitable adjustment for delay caused by the United States ("government"), holding that the government's termination for default was justified, and offsetting the equitable adjustment with the amount of unliquidated progress payments due to the justified termination. The case was submitted for decision after oral argument on December 5, 1996. Because we agree with the trial court that Amertex waived its cardinal change claim by entering into bilateral modifications, and because the trial court did not reversibly err in its calculation of delay damages, or holding of justified default termination, we *affirm*.

BACKGROUND

The detailed facts of the case are set out in the opinion of the Court of Federal Claims. *Amertex Enterprises, Ltd. v. United States*, Nos. 90-684 C, 91-1700, and 92-402 (Fed. Cl. 1995). In brief, Amertex was awarded a government contract for the production of chemical warfare protective suits ("chemsuits") on February 25, 1985. A total of 2,415,885 chemsuits were to have been produced by December 29, 1986. In the words of the Court of Federal Claims, "[f]rom its inception, this procurement was plagued by poor decisions, mistakes, and miscommunication that delayed and disrupted Amertex's performance of its obligations." During the course of performance, the government issued 42 modifications and eight amendments to the contract, totaling over 100 changes to the specifications for the chemsuits. Also during the course of performance, and after many of these unilateral modifications and amendments, Amertex and the government entered into bilateral modifications of the contract which provided for a revised payment scheme and delivery schedule. The government eventually terminated the contract

for default on January 6, 1989, over two years after the original deadline. Amertex had delivered fewer than half of the chemsuits it had agreed to deliver in the original contract.

Amertex submitted two claims to the Contracting Officer, one challenging the termination for default, and the second alleging a breach of the contract through cardinal change and seeking an equitable adjustment based on delay and disruption allegedly caused by the government. Both claims were denied, and Amertex filed suit in the United States Court of Federal Claims, which denied Amertex's cardinal change claim and default termination challenge, but granted in part its claim for an equitable adjustment. This appeal timely followed.

DISCUSSION

Decisions of the Court of Federal Claims are subject to only limited review. Factual findings are reviewed for clear error, while legal conclusions are reviewed de novo. *Alger v. United States*, 741 F.2d 391, 393 (Fed. Cir. 1984).

I.

Amertex first appeals the holding that the series of changes that the government made to the contract did not constitute a cardinal change. This court reviews the holding of a cardinal change de novo. *See, e.g., AT&T Communications, Inc. v. Wiltel, Inc.*, 1 F.3d 1201, 1207-08 (Fed. Cir. 1993). A cardinal change:

> occurs when the government effects an alteration in the work so drastic that it effectively requires the contractor to perform duties materially different from those

> bargained for. By definition, then a cardinal change is so profound that it is not redressable under the contract, and thus renders the government in breach.

AT&T Communications, 1 F.3d at 1205 (citing *Allied Materials & Equip. Co. v. United States*, 569 F.2d 562, 563-64 (Ct. Cl. 1978)). As to Amertex's cardinal change claim, the Court of Federal Claims stated:

> Notwithstanding the evidence supporting plaintiff's plausible and potentially convincing cardinal change assertion, plaintiff's position on this issue is fatally undercut by the bilateral modification made to the delivery schedule in 1988.

Although Amertex argues that, when presented with the bilateral modifications, it "could not . . . walk away" from the contract, it has neither pleaded nor proven duress. The signed modifications evidence a meeting of the minds and, since the modifications changed both parties' obligations, are supported by consideration. Thus, the bilateral modifications are enforceable contracts which replace the parallel provisions of the original contract. As noted above, the bilateral modifications included modifications to the delivery schedule and the payment scheme. By agreeing to these modifications, Amertex implicitly agreed to a changed specification and added costs it accrued thereby. As stated by the Court of Federal Claims, "[i]n essence, Amertex promised to produce the modified chempro suit, with all changes which had been made to July 1988 and given the numerous other government-caused difficulties, on a schedule contemplating half the pace as the

original contract." Moreover, by advancing payment due dates to delivery installment dates, Amertex bargained for and received an infusion of working capital that was needed in light of performance difficulties but that was not contemplated in the original payment scheme. Since Amertex agreed to the changes, it implicitly agreed that the changes were within the changes clause of the contract. There can only be a cardinal change if the government required Amertex to perform materially different duties from those bargained for in the contract *as modified.* Amertex does not so allege.

Amertex argues that *Air-A-Plane Corp. v. United States*, 408 F.2d 1030 (Ct. Cl. 1969), suggests a different result. In *Air-A-Plane*, a plaintiff was allowed to pursue both an equitable adjustment through the Armed Forces Board of Contract Appeals ("ASBCA") and a cardinal change claim through the Court of Claims. In rejecting the government's argument that the plaintiff was estopped from pursuing its cardinal change claim by virtue of its equitable adjustment claim, the court stated:

> This is an instance of an imposed election of remedies which seems to us unfair to contractors. One who was confident that Government modifications created a cardinal change, for which he could go to court at once, would still be well advised to pursue his administrative remedy under the Changes clause. If he failed to do so and the court decided that the alterations were not cardinal but within the clause, the contractor could well be left without any remedy at all — though it was clear that he was entitled to some compensation on one basis or the other.

Id. at 1034.

Amertex asserts that the instant situation is analogous — that it should not be required to decline to enter into the modification at the peril of losing its cardinal change claim.

We disagree with Amertex's reasoning. *Air-A-Plane* turned on the procedural limitations of the ASBCA at the time the case was brought. At that time, the ASBCA did not have jurisdiction to hear cardinal change claims. *Id.* Here, it was possible for Amertex to make both equitable adjustment and cardinal change claims in the same forum (as it did). Thus, there was no "imposed election of remedies" as criticized in *Air-A-Plane*. Although Amertex did need to decide whether to enter into the modifications or seek cardinal change breach remedies, this was a business choice, not mandated by jurisdictional statutes.

II.

Since there was no cardinal change, Amertex is entitled only to an equitable adjustment for delay damages caused by the government. Amertex appeals the Court of Federal Claims' finding that the government was solely responsible for only 36% of the 952 days of delay in the contract. Delay must be apportioned solely to one party for damages to be awarded. *Blinderman Constr. Co. v. United States*, 695 F.2d 552, 559 (Fed. Cir. 1982). Thus, Amertex cannot recover for any of the government's delay that is concurrent or intertwined with other delays. *Commerce Int'l Co. v. United States*, 338 F.2d 81, 90 (Ct. Cl. 1964). The determination of delay causation is a question of fact. *J.D. Hedin Constr. Co. v. United States*, 347 F.2d 235, 245 (Ct. Cl. 1965).

Amertex argues that the trial court misapplied Critical Path Methodology ("CPM") in calculating delay. CPM looks only to

delay along the "critical path," that is, those parts of a project that, if delayed, delay the entire project, to determine allocation of delay. Delay in non-critical path components of the project, because it does not delay the completion of the entire project, does not result in allocation of delay. CPM has typically been used in construction contracts where the determination of those parts of the project on the critical path is straightforward. *See, e.g., Haney v. United States*, 676 F.2d 584, 595 (Ct. Cl. 1982); *G.M. Shupe, Inc. v. United States*, 5 Cl. Ct. 662, 728 (1984); *Sterling Millwrights, Inc. v. United States*, 26 Cl. Ct. 49, 75 (1992).

The trial court here recognized that CPM is most useful in those contexts where the determination of the critical path is straightforward, but, nonetheless, was "unpersuaded that CPM is useless in the more complex manufacturing context." Although Amertex argues that the Court of Federal Claims incorrectly applied CPM, it does not argue, nor can it, that the court was even obligated to apply CPM, or any particular modification of CPM, for use in this manufacturing context.

We have carefully reviewed the Court of Federal Claims' detailed and thoughtful delay analysis. Although the analysis that the court did is certainly not the only conceivable method of analysis, and although there may be improvements that could have been made to the analysis (for instance, analysis of the causal effect of early government-caused delay on later Amertex-caused delay), we cannot hold that the analysis is clearly erroneous. Neither can we hold that the failure of the Court of Federal Claims to separately label disruption costs (costs caused by the government by creating more work for Amertex, not merely delaying Amertex's ability to perform) was clearly erroneous.

III.

Finally, Amertex challenges the Court of Federal Claims' upholding of the default termination. The court held that the government met its burden of proof that Amertex's financial condition at the time of the default termination made it reasonably likely that the contractor would be unable to finish performance in the remaining time. *See Lisbon Contractors, Inc. v. United States*, 828 F.2d 759, 765 (Fed. Cir. 1987). The court further held that Amertex did not have a valid defense of excuse because the poor financial condition of the company was not primarily caused by the acts or omissions of the government. *See TGC Contracting Corp. v. United States*, 736 F.2d 1512, 1515 (Fed. Cir. 1984).

Amertex argues that the factual findings relied on by the Court of Federal Claims are in error. We have carefully considered Amertex's arguments and discern no clear error in the Court of Federal Claims' analysis. Based on these underlying facts, the court reached the correct legal conclusion that the default termination was justified.

IV.

The Court of Federal Claims correctly held that the bilateral modifications are binding and therefore there was no cardinal change, and there was no clear error in the allocation of delay or default termination factual analysis. The decision of the Court of Federal Claims is therefore affirmed.

APPENDIX B — DISSENTING OPINION BY CIRCUIT JUDGE NEWMAN OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DATED FEBRUARY 24, 1997

NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition is not citable as precedent. It is a public record. The disposition will appear in tables published periodically.

United States Court of Appeals for the Federal Circuit

96-5070

AMERTEX ENTERPRISES, LTD.,

Plaintiff-Appellant,

v.

THE UNITED STATES,

Defendant-Appellee.

NEWMAN, *Circuit Judge*, dissenting.

I respectfully dissent, for the Court of Federal Claims applied incorrect law in holding that the contract modification of the payment and delivery schedules, three and a half years after commencement of the two-year contract, was a waiver by Amertex of any claim that the government had cardinally changed the contract. There was no waiver or release of such a claim, at any time.

The Court of Federal Claims made many findings relevant to the extent of the changes in the design specifications, and

how these changes affected Amertex's performance. The court found as fact that the design was new and untested, that the specifications were inadequate or incorrect, and that the contract was not performable in accordance with its terms. The court concluded that "The fixed price contract became, in part, a research and development contract." However, following this exposition, the court found as follows:

> The unreasonable rejection of the second First Articles and the other unreasonable acts by the government which undermined this project hampered mass production and, arguably, fundamentally changed the nature of this contract.
>
> Notwithstanding the evidence supporting plaintiff's plausible and potentially convincing cardinal change assertion, plaintiff's position on this issue is fatally undercut by the bilateral modifications made to the delivery schedule in 1988.

Thus although the Court of Federal Claims found that the claim of cardinal change was "plausible and potentially convincing," the court apparently inferred either release or waiver. That conclusion is incorrect, for the modification to the delivery schedule did not release or waive this claim, which related not to delivery, but to all of the contract changes. So substantive and financially significant a change in the contractor's rights can not be inferred from a contract modification that is silent on the matter of release of claims. *See Laka Tool & Stamping Co. v. United States*, 639 F.2d 738, 743 (Ct. Cl. 1980) (contractor did not waive claim for equitable adjustment when contract

modification did not contain an express waiver of the claim), *cert. denied*, 454 U.S. 1086 (1981).

The modification simply extended the delivery dates of the now delayed product, and provided for payment based on deliveries. It neither expressly nor by implication withdrew from the contractor the legal right to recover on an otherwise valid claim that the contract had been cardinally changed.

The panel majority offers the theory that since Amertex did not allege duress in accepting the contract modification, it can not argue that it did not waive its claim. Duress, alleged or not, is not at issue. The contractor was not required to walk away from the contract instead of entering into the modified delivery and payment terms, in order to preserve a claim for cardinal change.

> "Under established case law, a cardinal change is a breach. It occurs when the government effects an alteration in the work so drastic that it effectively requires the contractor to perform duties materially different from those bargained for. By definition, then a cardinal change is so profound that it is not redressable under the contract, and renders the government in breach."

AT & T Communications, Inc. v. Wiltel, Inc., 1 F.3d 1201, 1205 (Fed. Cir. 1993) (quoting *Allied Materials & Equip. Co. v. United States*, 569 F.2d 562, 563-64 (Ct. Cl. 1978)).

Cardinal change relates to changes in the entire contract,

with all of its modifications. *Atlantic Dry Dock Corp. v. United States*, 773 F. Supp. 335, 339-40 (M.D. Fla. 1991):

> [D]etermining the merits of a cardinal change claim requires an examination of the totality of the circumstances surrounding the project and the many modifications. . . . These facts cannot be nown until the project is completed or nearly completed.

Indeed, had Amertex wal ed away from the contract, such an action could have speeded Amertex's financial demise, for progress payments were being retained. A business decision to continue to perform does not waive a contractor's recourse to remedy on a theory of cardinal change. *Cities Service Helex nc. v. United States*, 543 F.2d 1306, 1313 (Ct. Cl. 1976):

> A material breach does not automatically and *ipso facto* end a contract. It merely gives the injured party the right to end the agreement; the injured party can choose between canceling the contract and continuing it.

See Allied Materials, 569 F.2d at 564 ("Undoubtedly, the cautious contractor might often proceed under the revised contract because of doubt whether he could invo e the cardinal change doctrine.")

The Court of Federal Claims did not ma e a final finding on the issue of cardinal change, instead holding that any claim on this ground was waived. The panel majority has ratified this error by requiring duress while ignoring the absence of either waiver or release. It is irrelevant whether there were hard

economic decisions made by Amertex; the question of law is whether there was a waiver or release of this claim, and there plainly was not. The decision of the Court of Federal Claims, since based on incorrect law, should be vacated, and the matter returned to the trial court for final determination of the issue of cardinal change.

APPENDIX C — OPINION AND ORDER ON LIABILITY AND DAMAGES OF THE UNITED STATES COURT OF FEDERAL CLAIMS DATED DECEMBER 15, 1995

UNITED STATES COURT OF FEDERAL CLAIMS

December 15, 1995

Nos. 90-684 C, 91-1700 and 92-402 (consolidated)

AMERTEX ENTERPRISES, LTD.,

Plaintiff,

versus

UNITED STATES OF AMERICA,

Defendant.

Marc Lamer, Philadelphia, Pa., for plaintiff. Ruth E. Ganister, Philadelphia, Pa., of counsel.

Sheryl L. Floyd, Washington, D.C., with whom was Frank W. Hunger, Assistant Attorney General, for defendant. S. Lane Tucker and Sandra Guydon, Washington, D.C., of counsel.

OPINION AND ORDER ON LIABILITY AND DAMAGES

TURNER, Judge.

This opinion addresses the merits of three consolidated cases (filed pursuant to the Contract Disputes Act, 41 U.S.C. § 605(a)) involving a multi-million dollar supply contract. Final post-trial arguments were conducted on June 21, 1994. This decision resolves both liability and damages.

Appendix C

Plaintiff agreed to manufacture over 2.4 million chemical protective (chempro) suits for defendant in exchange for approximately $96 million. After more than four years of intermittent delay, defendant terminated the contract for default, contending that plaintiff's poor financial condition endangered completion of the contract. The parties blame one another, almost exclusively, for plaintiff's slow progress and financial problems.

Upon consideration of voluminous testimony and thousands of exhibits presented during a trial spanning eight weeks over a period of several months, and, further, upon consideration of extensive briefing, it is concluded as follows: First, plaintiff failed to prove that defendant breached the contract under the theory of cardinal change. Second, plaintiff demonstrated that it deserves an equitable adjustment for that portion of delay and disruption attributable solely to defendant. Third, notwithstanding those delay and disruption damages, defendant proved that the termination for default was justified. Fourth, defendant established its right to the balance of unliquidated progress payments less the amount of plaintiff's equitable adjustment.

I.

The parties' versions of relevant events could hardly be more diametric. Their antagonism compounds the exceptionally tangled facts giving rise to this contract dispute. In such a context, Justice Jackson's observation seems apt: "It can never be made simple, but we can try to avoid making it needlessly complex." *Dobson v. Commissioner of Internal Revenue*, 320 U.S. 489, 495 (1943) (describing tax law). With this goal in mind, we chronicle the life of the contract in dispute.

Appendix C

A. Solicitation & Award

On September 7, 1984, the United States government[1] solicited sealed bids for the mass production of chempro suits. DX-2001.[2] The manufacture of these chemical warfare protective uniforms involved both the sewing of a nylon cotton (nyco) twill outer garment treated with quarpel water-proofing and the attaching of a lining sewn from a nylon tricotton (tricot) material laminated with a special charcoal. The chempro design also required the attachment of butyl-coated reinforcement patches and special "atropine" pockets designed to allow the wearer to gain access to antitoxin syringes kept near the body for warmth. In all, the technical data package (TDP) detailing assembly of the garments required more than 162 manufacturing operations for each chempro suit, referenced twenty-one primary specifications, and imposed stringent testing requirements on both components and final products. DX-3078.

The solicitation requested bids for the manufacture of millions of chempro suits in accordance with specification MIL-S-43926D, called "specification D." In internal memoranda, the government described this procurement as "an accelerated program designed to correct a critical deficiency in the standard

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1. For clarity, the terms "defendant" or "government" will be used in place of the acronyms for the several government agencies involved in this contract. On defendant's side, the chempro suit procurement involved cooperation among the Defense Personnel Support Center, United States Army Natick Research & Development Laboratories, Defense Logistics Agency, Defense Contract Audit Agency, and numerous subdivisions within these agencies. The specific government actor will be mentioned only when necessary.

2. Defendant's and plaintiff's trial exhibits are cited as "DX-" and "PX-," respectively. References to trial transcripts are designated as "Tr."

chemical protective overgarment." DX-2155. Amertex Enterprises, Ltd., (Amertex) submitted a unit price bid of $39.88 per chempro suit for the production of the uniforms within a 670 day period. Amertex's bid was 1.3 %, or 52 cents, lower per suit than the closest bid of a qualified, experienced competitor. PX-284. Five firms bid within twenty-five percent of Amertex's bid. DX-2153.

Before accepting Amertex's bid, however, the government conducted two detailed pre-award surveys of the company. These surveys concluded that Amertex was capable of successfully performing the terms of the solicitation. In particular, the government determined that Amertex possessed the experience, production capacity, accounting system, and quality control procedures necessary to fulfill the procurement requirements. DX-2015. In fact, Amertex had participated in the production of millions of chempro suits under a previous design of the suit, specification B. PX-284. The company also had manufactured hundreds of thousands of fragmentation vests, military shirts, and duffle bags for the government on other contracts. PX-284.

The government also examined whether Amertex was certified as a small business under the government's 8(a) program. 13 C.F.R. §§ 121 & 124 (1984). The government elected to offer this enormous and expedited procurement as a "total small business set-aside" for contractors employing no more than 500 workers. DX-2001. Such a set-aside necessarily required that the government provide the selected prime contractor and its subcontractors with compatible patterns and consistent interpretations for the production of the 2.4 million chempro suits. Amertex fulfilled the small business requirement.

Upon completion of the pre-award surveys, the government

selected Amertex as the lowest responsive and responsible bidder. On February 25, 1985, the government awarded to Amertex contract number DLA100-85-C-0402. DX-2002. In the contract, the government accepted Amertex's bid unit price and Amertex agreed to produce 2,415,885 chempro suits for $96,345,493.80. The contract set forth a rapid delivery schedule and referenced numerous specifications, many of which were modified after contract award.

B. Testing of the Specifications

From its inception, this procurement was plagued by poor decisions, mistakes, and miscommunication that delayed and disrupted Amertex's performance of its obligations. Even prior to contract award, government actions created an unstable foundation for successful completion of the contract. For instance, defendant ignored the recommendation of the designers of the new suit that the garment be tested for mass production through the use of an "expanded First Article."[3] DX-2127. This type of First Article is described in the "Memorandum of Agreement for Clothing, Textiles, and Equipment Between Defense Personnel Support Center and U.S. Army Natick Research & Development Laboratories [Natick]" as follows:

> In this procedure, a contractor makes a quantity of items under production conditions to determine the validity of the technical data. The contractor is required to critically review the TDP prior to and during first article production and to make all required changes.

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3. "First Articles" are preliminary samples, or prototypes, of the garment.

Appendix C

PX-1. In contrast, when a First Article is not "expanded," the contractor is required to make a nominal quantity to demonstrate the ability to interpret the TDP so as to produce an acceptable finished item. PX-1. Generally, an unexpanded First Article is used either after the initial procurement of a new specification or when revisions involve "simple" clothing items.

The design engineers urged that the revised patterns and specifications for the chempro suit be verified under mass production conditions through the manufacture of several hundred suits in the full range of sizes. *See* PX-2; Tr. 7941-42 (Levell). The engineers recommended an expanded First Article because the technical data package for specification D involved, in their words, "major changes" from the preceding specification. PX-2. These changes included the addition of butyl protective pieces at the elbows and the knees; the use of the chemical phoschek with the state-of-the-art additive polyethylene oxide (polyox) in the mixture (slurry) for the charcoal laminated lining ("Type III" charcoal laminate); the addition of atropine syringe pockets on the coat; the addition of other pockets on the sleeves; the addition of gussets at the leg closures; the redesign of the chest pockets to incorporate side entrance; the addition of hip pockets on the trousers; and the change to bellows-type pockets with flaps on the trousers.

In light of these revisions, the engineering memorandum indicates that there were concerns about sending specification D into full-scale production without adequate testing via an expanded First Article. Tr. 7940-41 and 7943-48 (Levell). When an expanded First Article is not used, the government usually requires the contractor to produce a "standard" First Article of fifty suits of varying sizes before full-scale production can begin. Tr. 4702-04 (Hepner), Tr. 4498 (Pease), Tr. 3077-78 (Price). Nevertheless, the government chose to use a First Article of five

units, that is, five samples to be produced individually rather than *en masse*. DX-2001. Had the government used an expanded First Article, the contractor would have known that the new specifications had not been tested for accuracy in mass production. Indeed, under an expanded First Article, once a contractor "certifies [that] the TDP is adequate for mass production, future changes (other than product improvement) are made at no cost to the government." PX-1.

To justify its decision to override the engineering recommendation for an expanded First Article, the government relied in part on the testimony of Lisa Hepner, a quality specialist for the government. Although the use of an expanded First Article is normal after the issuance of such a revised specification (Tr. 4199), Hepner testified that no such testing was necessary because, in her opinion, the changes from the previous specification were minor. Tr. 4676.

The government's heavy reliance on Hepner's opinion in this instance was misplaced. At the time of the decision, Hepner had held her position for less than a year, had only one month of government training courses, and had no professional experience in the manufacturing or sewing industries. DX-3333. The changes to the specification, on their face, cannot reasonably be dismissed as "minor." The engineers contemporaneously assessed that specification D embodied "major changes." Some of these major changes were needed, urgently, to correct a "critical deficiency" in the previous specification for the chempro suits, which were called "overgarments" at that time.[4]

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4. Indeed, it appears that defendant "rushed" specification D into production because an expanded First Article would have lengthened this expedited procurement for the new chempro suits designed to correct a potentially lethal defect in the old garments. *See* DX-2132; DX-2155.

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We are similarly unpersuaded by defendant's other main explanation for its decision to override the engineering recommendation for an expanded First Article. At trial, the government insisted that no expanded First Article was warranted because the adequacy of specification D had already been tested prior to the solicitation. To support this contention, the government notes that Winfield Manufacturing Company (Winfield), one of Amertex's competitors, produced 200 of the chempro overgarments in July 1983. The government evaluated fifty of the suits and identified 158 defects. DX-2138. Even though the government recognized that the Winfield suits had "an exceptional amount of deficiencies," it observed that "the lot should be accepted since none will affect the serviceability, or involved any of the unique design changes for which the end item was produced, or will be evaluated for, in field testing." DX-2138.

Indeed, as Don Wadja (project director at Natick for chempro suits prior to 1985) testified, the primary purpose of the Winfield samples was to subject the suits to field testing, *i.e.*, chemical agent and human factors (wear) testing, not to verify that the design was sufficiently accurate for the mass production of millions of the garments. Tr. 4151-53, 4162-64 (Wadja). Moreover, unlike Amertex, Winfield was not charged with manufacturing its own quarpel-treated nyco and charcoal laminated tricot lining. Winfield received the materials from the government, along with one sample suit, a pattern, and a partial table of operations. DX-2135; Tr. 4178-79 (Wadja). Additionally, a Winfield representative, Weinsten, acknowledged at trial that the samples were not manufactured under mass production conditions. Tr. 7480 (Weinsten). The following exchange during plaintiff's direct examination of Weinsten illustrates this point:

> Q: And in the course of that undertaking, was there any effort to determine the mass produced ability [mass produce-ability] of the specification?
>
> A: Not by us. It wasn't part of the contract.

Tr. 7480 (Weinsten). We are convinced that the revised specifications were not adequately tested for mass production.

Furthermore, the engineers recommended the use of the expanded First Article in the memorandum dated May 31, 1984, in spite of the Winfield suits of 1983. PX-2. The government disregarded this recommendation, as rationalized in Hepner's testimony. In addition to not testing the revised specification for "mass produce-ability," the government elected to solicit the manufacturing of millions of chempro suits even though it was aware of several specific potential deficiencies with specification D. These potential deficiencies included problems with suits exceeding the weight requirements of the specifications and lack of quality control provisions for the state-of-the-art charcoal lining, among others. PX-3. Nonetheless, the government chose to proceed with this accelerated 2.4 million unit procurement by requiring the contractor to submit only five sample units before advancing to full-scale production. This choice was but one of the factors that contributed to the production disaster that this contract became.

C. No Waiver Policy Change

Immediately following contract award, Amertex's ability to perform the expedited procurement successfully was diminished by a change in the manner in which deviations were

handled. On February 28, 1985, three days after the contract was signed, defendant circulated a change in practice dubbed the "No Waiver" policy, which required strict adherence to all specifications, no matter how minor. DX-2161; DX-2349. This policy interpreted a new regulation that became effective three months after contract award. 48 C.F.R. § 46.407 (1985). Prior to that time, the government traditionally allowed personnel closely involved in a clothing procurement to give waivers for deviations that did not affect serviceability of the item. *See, e.g.*, PX-3; PX-307 (showing that the previous contractor using Type III charcoal lining had routinely exceeded the weight requirements and was granted waivers). In the case of the chempro suit, those parts of the specification that had not been revised had also not been strictly enforced in previous procurements except when a nonconformance diverged significantly from the specifications or adversely affected serviceability.[5] One of the many examples of the past approach toward chempro suit evaluation was the government's acceptance of the Winfield suits of 1983 even though 158 defects were identified. DX-2138. According to the new interpretation, which was not in place at the time of bid or award, deviations would no longer be tolerated.

In an internal memorandum, the new regulation was interpreted by the Defense Logistics Agency as follows:

> [W]aivers are the exception, not the rule, and

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5. *See* Tr. 73-74 (L. Jacobson) (stating that waivers were not an issue because tolerances were implied when the company worked on a previous version of the suit); Tr. 2054, 2204-06 (Ludwig) (noting that inspectors on previous versions implied tolerances for mass production); PX-284. *See, e.g. Appeal of Vi-Mil, Inc.*, 82-2 BCA 15,840, 78,527, ASBCA No. 25,111 (A.S.B.C.A., 1982) (noting that "although the tolerances do not appear in the specifications it is undisputed . . . that they have been allowed for many years . . . ."). *Cf.* DX-2175.

> if the specification is wrong, take action to change it, do not waive it .... In addition, the [regulation] places approval of waivers at the Center Command level as assurance to the contract administration community that when a waiver is approved it has been reviewed at the highest level.

DX-2161. The purpose of the change was to improve the quality of goods as well as to make contractual performance more efficient by identifying and correcting inadequacies in specifications rather than simply waiving the requirements. *Cf.* DX-2166.

In the context of the Amertex chempro contract, however, the policy's effect was exactly the opposite. Signed prior to the policy change, the contract between Amertex and the government contemplated the rapid manufacture of millions of complex garments produced through the coordination of several small businesses. The decision to produce items in an accelerated contract of this size involved financial assumptions related to economies of scale, that is, cost efficiencies to be achieved under expedited mass production conditions. *See, e.g.*, Tr. 2994-2996 (Caldwell). In the Amertex contract, the interpretation of the regulation as a No Waiver policy caused costly shutdowns and slowed production for minor deviations while the contractor awaited high level approval of waivers and clarifications. The situation was further aggravated because the revised specification had not been tested for adequacy in mass production. Thus, although the policy interpretation appeared benevolent on its face, it was detrimental in practice because the government repeatedly failed to give prompt clarification or waivers for ambiguous or erroneous specifications.

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The new policy also applied to First Article approval requirements. In a change from past practice, the government decided to strictly evaluate all First Article submissions. In particular, the Defense Logistics Agency made the following interpretation:

> The policy requires contracting officers to use [the] specified accept/reject criteria as the basis for first article approval decisions. It also requires contracting officers to disapprove first articles which are manufactured with nonconforming parts and materials. In addition . . . contracting officers shall not grant conditional approval of first articles without the specific approval of the Center Command.

DX-2161. Those in charge of applying this interpretation in evaluating the First Articles and mass production units seemed to take the policy to an illogical extreme. As will be demonstrated, in the Amertex contract, government personnel applied the No Waiver interpretation as a "no tolerances" rule, scrutinizing every sewing operation for deviations of as little as 1/32 of an inch, approximately the size of the period at the end of this sentence. The policy interpretations for both the Amertex First Articles and mass production units frequently resulted in "overinspection" by government representatives.

Hence, the No Waiver Policy helped lay the foundation for some of the intermittent delay and disruption that occurred on this contract. The implementation of the new policy fostered an inspection mindset that was often unreasonable. Government inspectors seemed to ignore the fact that the chempro uniforms

were not solicited as individually tailored dress uniforms but were procured as an expedited mass production of millions of battle garments requiring the coordination of different plants employing hundreds of textile workers who were handling numerous specifications, some of which had never been tested or strictly enforced before. The numerous government modifications to those specifications after contract award only compounded the problems inherent in this situation.

D. Delay Analysis

Government actions thus sowed the seeds of delay and disruption before plaintiff sewed a single stitch of this chempro contract. At trial, however, the parties offered dramatically conflicting evidence regarding fault for delay during the 1,411 days between contract award on February 25, 1985 and default termination on January 6, 1989.[6] The contract set forth a schedule requiring delivery of nearly a quarter of a million chempro suits within eleven months, by January 31, 1986, and then monthly deliveries of approximately 201,335 suits for a total of 2,415,885 by December 29, 1986. The parties agreed to a contract performance period of 672 days. By the time of the default termination, 1,411 days after award, however, Amertex had not completed performance.

It is impossible to quantify with exactitude the amount of and the responsibility for the delay and disruption in this case. The contractor encountered a variety of problems of differing magnitudes and durations. Perhaps in this type of case more than others, determining delay involves particularly intuitive assessments of the conflicting evidence. Nevertheless, we are

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6. In counting days, the court, like the parties, does not count the date of award, February 25, 1985, as a performance day.

convinced that both parties share responsibility for the delay and disruption that occurred. Moreover, we are confident that the evidence adduced at trial provides a sufficient basis for apportioning responsibility for the delay.

1. Evaluation of the Experts

The parties do not agree on the number of delay days, let alone responsibility for that delay during the 1,411 days between award and termination. Plaintiff, the party bearing the burden of proof on the delay and disruption issue, contends that 984 delay days occurred and that the government caused 956 of them. Defendant counters that there were more than 1,118 delay days, only 94 of which were the sole responsibility of the government.

The delay experts of both parties had substantial and comparable experience in schedule and delay analysis. The experts differed sharply, however, in the thrust of their methodology and the results of their analyses. For example, plaintiff's delay expert, Jayant Pandya, Project Director at Hill International, Inc., calculated and attributed delay using an analytical technique known as "critical path methodology" (CPM). CPM is a method for determining which delays in a multi-task project are critical, or controlling, in terms of actually delaying completion. Defendant's delay expert, Michael D'Onofrio, a Professional Engineer at MDC Systems, offered an alternative calculation and attribution of delay which purportedly attached equal significance to every delaying element in a manufacturing case like this. Moreover, D'Onofrio criticized plaintiff's use of CPM, contending that the manufacturing context makes it impossible to isolate the specific aspect of mass production that was "critical" or significant in terms of delay.

Appendix C

We credit the testimony of both delay experts but find the testimony of neither to be persuasive in all areas. In our analysis, we draw upon the opinions expressed by the experts of both parties but rely extensively upon neither the methodology nor determinations of any of them. Rather, as we explain, our conclusions concerning quantification of delay and responsibility for the delay are based upon our independent assessment of the data amassed at trial.

a. Calculating Amount of Delay

In calculating delay, both parties' experts analyzed the amount of delay within specific time periods in diagrams called "time impact analyses" (TIA's). In particular, defendant's expert estimated the amount of delay that had occurred by certain dates, one of which was June 30, 1988. By that time, plaintiff had delivered more than a half-million chempro suits and had another million suits in the production line. The contract originally planned for a performance period of 672 days, with 340 days to deliver 201,355 chempro suits and 332 additional days to deliver the remaining 2.2 million suits.

D'Onofrio testified that 1,118 delay days occurred during the 1,221-day period ending June 30, 1988.[7] Thus, defendant asserts that plaintiff made only 103 days of "progress" (1,221 – 1,118) despite the amount of production that had occurred by that point. Defendant's expert also maintained that additional delays occurred between June 30, 1988 and termination on January 6, 1989, but did not offer a delay figure for this period. We believe that defendant's calculation overstates the amount of delay.

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7. Defendant's expert stopped "counting" delay days for the last six months of the contract, even though he acknowledged production delays up to default termination.

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Plaintiff's expert offered a more persuasive basis for calculating the total amount of delay by analyzing the level of production in each of twelve categories of chempro suit operations.[8] Based on this analysis, Pandya opined that Amertex experienced 984 delay days before default termination.

Our review of the production records and schedules on which Pandya relied leads us to conclude that plaintiff's estimate was off by a slight margin. In addition to scrutinizing the testimony and thousands of exhibits, we have tested the validity of both parties' delay arguments against Amertex's actual production levels. Upon analysis of the conflicting evidence, we find that there were 952 delay days during the 1,411 calendar days between contract award and termination.

b. Helpfulness of Critical Path Methodology

Defendant and its delay analyst maintained that CPM is inappropriate in a manufacturing context due to the complexity of mass production, and because such projects involve elements which have unpredictable production times or durations, such as the use of First Articles or a dependence on material suppliers. It is true that the archetypical use of CPM is in the analysis of construction projects. For instance, under CPM, a delay in obtaining carpet would not actually delay the project if, at that

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8. Amertex made a production plan with manufacturing goals and tracked production levels in the following twelve categories: cut butyl, cut coats (nyco), cut pants (nyco), cut lining, sew coats A ("A" indicates outershell), sew pants A, sew lining, sew coats B ("B" indicates joining lining with outershell), sew pants B, interim pack, final packing and testing, and delivery. Of course, the actual production of the chempro suits involved Amertex's planning for and monitoring of production levels on materials manufacturing, testing, and shipping, as well as the efficiency of hundreds of sewing operations.

time, the floor had not been completed (the "critical" task being the completion of the floor). *See, e.g. Haney v. United States,* 230 Ct.Cl. 148, 676 F.2d 584, 595 (1982).

While CPM may be most useful in a simplified construction context, we are unpersuaded that CPM is useless in the more complex manufacturing context. (Defendant's concerns about the complexity and uncertainty in mass production are also applicable to the use of CPM in construction cases, a use defendant finds acceptable.) Furthermore, we do not agree that the uncertainty of timing in manufacturing cases is a proper ground for rejecting plaintiff's CPM testimony. While the manufacturing process necessarily involves estimations about the durations of key events, Amertex's master schedule, in conjunction with the contractual delivery schedule, provides a reasonable basis for comparing progress with production goals for the purpose of analyzing delay. The parties have provided the evidence necessary to adjust for any inadequacies in the "as-planned" schedule.

However, we do not suggest that the use of CPM in a manufacturing context is trouble free. The enormity and complexity of the chempro suit contract does make it exceptionally difficult to determine which item or items were critical at different times during production. Moreover, the non-linear, multi-tasking reality of mass production makes attributing causation for delay especially laborious, even though the chempro suit involved a linear sequence of operations with specific estimates of duration. Despite these problems, CPM is useful, but not conclusive, in analyzing the delay in this case.

c. Attributing Responsibility for Delay

Not surprisingly, Pandya attributed the vast majority of the

delay to the government. D'Onofrio's mirror testimony attributed almost all of the delay to plaintiff. Out of 1,118 delay days, D'Onofrio attributed 94 days solely to the government, 88 days concurrently to both parties, and the remainder solely to Amertex.

As the chronology of this contract unfolds, it will become apparent that much of the delay is best categorized as "concurrent." We next set forth the factual findings relating to responsibility for the 952 delay days that occurred during the four years of the chempro contract.

E. Evaluating Delay Chronologically

1. Year One

After contract award on February 25, 1985, Amertex began the process of making purchase orders for the chempro suits. Almost immediately thereafter, however, preparations were delayed when the contracting officer (CO) advised Amertex that the government was planning to issue formal modifications of the specifications. Tr. 135 (L. Jacobson). The parties discussed the proposed changes at a meeting on April 9, 1985. PX-7; DX-2162. The basic changes included the addition of a hydrostatic test to verify the proper formulation of the chemicals phoschek and polyox in the Type III charcoal laminate;[9] the change from elastic sleeve closures to hook and pile (velcro) fasteners; the replacement of the snaps on the coat with velcro fasteners; a

9. As mentioned earlier, the government sent the procurement into solicitation without quality control provisions for the new charcoal slurry. The addition of the hydrostatic test was intended to address this deficiency. In another change from past practice, the government decided that it would no longer accept contractor certification that the specification recipe for the charcoal lining had been followed.

change in the type of slide fasteners (zippers) from brass to continuous element (plastic), and an increase in the length of the garment. The specification was also to be changed from specification D to specification E. DX-2162.

On May 24, 1985, three months after contract award, Amertex received the official version of these changes in unilateral modification P00001, (P1). PX-12. Modification P1 provided that delays and costs would be finalized by the administrative contracting officer.[10] It would take the ACO three months to make a contractual extension for P1 and three years to finalize the increased costs related to this modification.

The parties had another post-award meeting on June 24-25, 1985 to discuss additional specification issues. At these meetings, the parties discussed problems with the state-of-the-art charcoal laminate passing the testing requirements and, specifically, whether some of the tests had negative effects on the others. Tr. 2821; 2880-81; 3433-34. These testing requirements included the new hydrostatic resistance test, a carbon tetrachloride test, weight test for the cloth, and a "ball-burst," or fabric strength, test. DX-2190; PX-13; PX-14; PX-15; and PX-1007. The latter three standards were part of the solicitation. The parties discussed other issues including the "traceability" of treated materials for verification requirements and the transportation of items between the prime contractor's facilities in Puerto Rico and subcontractor plants in Puerto Rico and the continental United States.

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10. In the Amertex contract, two different types of modifications were issued: the "P" series, those modifications to the contract signed by the procurement contracting officer (PCO), and the "A" series, amendments to the contract signed by the administrative contracting officer (ACO).

Three weeks later, on July 18, 1985, the parties executed a bilateral agreement, P2, which made two additional changes to the contract. This modification changed the specifications by correcting the size of the velcro fasteners for the atropine pockets and imposed a new component test requiring infrared reflection limits for the nyco outer shell cloth. PX-16. This modification also required Amertex to submit to the PCO within 30 days a proposed delivery extension for the P2 changes. P2 also provided that the ACO would finalize any price adjustment resulting from the changes therein.

On July 31, 1985, the parties executed another bilateral agreement, A1, allowing Amertex to apply for permission to purchase "Long Lead Time Items and to commence Essential Production work prior to First Article Approval." DX-2002. This amendment to the contract explicitly provided that the agreement changed neither price nor delivery. DX-2002. A1 allowed Amertex to begin receiving progress payments to cover the costly expense of obtaining large quantities of base materials necessary for production build-up.[11] According to the terms of the amendment, however, any non-essential preparatory work was still at the contractor's risk.

a. The "90-Day" Delay

On August 19, 1985, the PCO determined that Amertex was entitled to a schedule extension totalling 90 days as a result of

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11. These materials included carbon, butyl, tricot, polyurethane foam, and nyco. DX-2173. The estimated cost of the first batch of materials was $6.9 million. Defendant authorized progress payments up to $6,994,501, subject to a 95% reimbursement limitation under Defense Acquisition Regulation 7-104.35. DX-2201. By the end of 1985, Amertex would receive payments totalling $5,244,018, which covered less than one-third of the incurred costs for materials only. DX-2273.

modifications P1 and P2. PX-20. That 90-day period was calculated by comparing the contract award date, February 25, 1985, with the date that Amertex received P1, which was May 26, 1985. PX-15. The government did not transmit to Amertex the new patterns that corresponded with the formal changes in P1 until June 19, 1985.[12] Defendant issued P2 a month after that.

At trial, Amertex disputed the validity of the 90-day period as an accurate and reasonable calculation of the amount of delay caused by P1 and P2. For instance, Amertex contends that its performance of the contract was delayed because crucial preparations were slowed pending receipt of both the formal modifications and patterns. Plaintiff also claims that the 90-day figure was a premature calculation because it was not clear how much additional time would be necessary to produce components conforming to the two new testing requirements of P1 and P2. Moreover, plaintiff contends that, at the time, it was not clear what the net effect of the new fasteners would be in terms of production time and cost.

The government proposed a bilateral modification, P-3, incorporating the 90-day assessment for P1 and P2 and a provision waiving all delay claims for P1 and P2. Amertex refused to waive its claim for delay damages as a result of P1 and P2 and, accordingly, did not sign the modification allowing only a 90-day extension to the contract.

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12. PX-20. Plaintiff also suggests government delay for the late transmission of the patterns and refers to DPSC Form 4234, APR 87, at 21, which describes Defense Acquisition Regulation § 52.245-1008. PX-221. However, as Amertex presented no evidence that the government's failure to send the new patterns actually delayed plaintiff, we do not find any delay specifically for the late transmission of the patterns.

Appendix C

Unilateral modification P3 poses another complication, however, which exemplifies the miscommunication and uncertainty that permeated the contract performance. Both parties refer to P3 as the "90-day extension." However, P3 modified the First Article and mass production delivery schedule from a schedule set forth in a modification that was never issued by the government. P3 explicitly changed the First Article submission deadline from August 24, 1985 to November 22, 1985, a period of 90 days. However, P3 actually extended the date for the completion of the contract by only 89 days (from December 29, 1986 to March 28, 1987). Nonetheless, D'Onofrio opined that the government was solely responsible for compensable, nonconcurrent delay for the "90 days" embodied in P3.[13] Therefore, we find the government solely responsible for at least 90 days of delay for modifications P1 and P2. Whether Amertex actually proved in excess of these 90 days of compensable delay and disruption for P1 and P2 changes is addressed hereafter.

b. The First Article Submissions

The next significant aspect of Year One in terms of delay relates to the contract's requirement that Amertex submit five First Articles. The contract incorporated the solicitation's First Article provision. That clause stated, in part, that "[b]efore First

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13. In defendant's 1989 decision on Amertex's delay claim, the contracting officer did not count the 90-day delay in P3 against the government. DX-3252. Defendant suggested, instead, that Amertex delayed the project by not having all of the slurry equipment until late July. Amertex offered convincing evidence that this item was not critical and that the slurry could be mixed by hand for the five sample units. Defendant also noted that one of three nyco suppliers stopped production, but Amertex established both that it had sufficient nyco on hand and that this item was not on the critical path prior to First Article approval.

Article approval, the acquisition of materials or components for, or the commencement of production of, the balance of the contract quantity are at the sole risk of the contractor." DX-2001.

By reference to the solicitation, the contract set forth a production scheme which allowed the contractor 180 days to prepare the five-unit First Article, then thirty days for the government to review those samples, followed by 130 days for the contractor to build-up production rapidly in order to make the first delivery of 201,335 suits. Accordingly, First Article preparation was on the "critical" path of production during this period of the contract; both parties acknowledged that First Article preparation was a prerequisite to production. Thus, any delay in First Article approval delayed the performance of the contract as a whole.

The contract signed February 25, 1985 incorporated by reference the First Article provisions in paragraph II5 of the solicitation. In so doing, the contract created another ambiguity that complicates the determination of delay during the first year of the contract. The contract referred to the solicitation's First Article provisions which required the delivery of the five samples within 180 days of the contract award. In direct contravention of that provision, the contract also explicitly states that the First Articles were due on June 4, 1985, or within 98 days. The record is unclear about which due date was in effect and each of the parties makes internally conflicting statements. At one point, plaintiff had even developed a master schedule conforming to this earlier date. However, in Post-Trial Briefs, defendant and plaintiff both refer to the initial due date of the First Articles as August 24 or August 25, 1985, respectively, which is approximately 180 days from award. *See* I Def.'s Post-Trial Br. 1 (1993); Pl.'s Post-Trial Br. 16 (1993). We deem August 24,

1985 to be the operative first deadline for First Article submission.

As noted, modification P3 changed that deadline for First Article presentation. On August 19, 1985, because of the changes in modifications P1 and P2, the government decided to extend the First Article deadline by approximately 90 days, from August 24 until November 22, 1985. PX-20. Thus, prior to the August 24 deadline for the First Articles, the CO issued a determination that Amertex was entitled to 90 days of "excusable" delay due to "numerous specification and pattern changes." PX-20. That determination was approved by the government internally on August 28. At about this time, a disagreement arose about the waiver language in modification P3, which set forth the 90-day extension. In response, the government unilaterally issued P3 which changed the First Article deadline to November 22.

Regardless of the parties' other disagreements about the modification spawned by the August 19 determination, P3 is a binding modification of the contract's delivery schedule. P3 explicitly imposed a new First Article delivery deadline of November 22. Even though at trial the parties made contradictory statements about the new First Article deadline, we find that both parties contemporaneously considered the new deadline to be November 22, 1985. This has significant ramifications for the calculation of delay based on what actually transpired during the First Article submissions.

1) The First Set of Samples

Amertex submitted five First Articles on about September 10, 1985, two months ahead of the November 22 deadline set by modification P3. DX-2216. Those First Articles were rejected

by the government on September 18, 1985.[14] Had the initial First Articles been approved, Amertex would have been authorized to proceed with production ahead of schedule. Nevertheless, because September 10 was well in advance of the contractual deadline, the rejection of those First Articles cannot be said to have truly "delayed" or extended the project for purposes of compensable delay. Therefore, any impropriety in that rejection is immaterial to the determination of the extent to which the contract was delayed beyond the 672-day performance period originally agreed.

In response to the rejection of the September First Articles, Amertex opted to submit new First Articles by the binding deadline rather than to appeal the rejection of the first submission. Tr. 163. While Amertex was preparing for the second submission, the government unilaterally issued modification P4 which made several new changes.[15] P4 changed the applicable specification from "E" to "F (GL)." Additionally, P4 authorized the limited use of brass zippers, altered new specifications that had been inserted by modifications P1 and P2, and corrected some "discrepancies found between the patterns and

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14. The government attempts to defend its rejection of the September First Articles, in part, by citing plaintiff's November 29, 1985 letter accompanying the second First Articles. DX-2254. In that letter, Amertex stated: "We acknowledge the comments of your letter dated 7 October 1985 in which you pointed out the defects encountered in the first five Chemical Protective Suits submitted for First Article evaluation." DX-2254.

15. P4 also stated that any price or delivery extension would be finalized by the ACO. The changes in P4 were definitized almost a year and a half later in a bilateral amendment to the contract, A3, dated March 9, 1987. DX-2002. A3 fixed the cost of the changes in P4 at $1,240 and contained a release of liability for the P4 changes. DX-2002.

specifications" relating to the atropine pocket construction and to the trousers. DX-2002. Then, on November 4, 1985, the parties agreed to modification P5, approving certain subcontractors and designating locations for government inspection of chempro components. Bilateral modification P5 provided that no delay in deliveries would result from the changes therein. With the modified contract specifications and patterns, Amertex continued working toward the November deadline for the First Articles.

2) The Second Set of Samples

Amertex submitted the second set of First Articles on November 29, 1986, seven days late. PX-26. Amertex avers that it was tardy because it was awaiting clarification of the specifications for the zippers on the legs of the trousers. DX-2254. However, it appears that plaintiff received clarification by telephone around November 12. Therefore, Amertex's evidence is insufficient to support its contention that the government is responsible for Amertex's submission of the November First Articles seven days late. Furthermore, the contract forbade Amertex to begin full-scale production until the First Articles were approved; consequently, these seven days delayed performance of the contract and are chargeable to Amertex.

In the letter transmitting the November First Articles, Amertex acknowledged the presence of some deviations in the new set of samples. DX-2254. Amertex described these deviations as minor and correctable in production and, alternatively, as due to inconsistencies between the specifications and the patterns. *Id.*

On December 18, 1985, the government, through quality

assurance specialist Hepner, indicated its concern about some discrepancies between the specifications and the First Articles. In response to these criticisms, Amertex reiterated, with greater specificity, its position that the deviations were minor and correctable in production. *See, e.g.*, DX-2262. At the same time, Amertex requested that the government not further delay authorization to commence production. *Id.*

The government ignored this request and officially rejected the second submission on December 30, 1985. DX-2268. This was one day later than allowed by the solicitation, which provided that the government had "30 days . . . [to] notify the Contractor, in writing, of the conditional approval, approval, or disapproval of the first article." DX-2001. D'Onofrio acknowledged defendant's sole responsibility for this one day of delay for tardy evaluation and we so find.

The key issue for attributing the remaining delay in Year One is the propriety of the government's rejection of the November First Articles. The parties disagree about responsibility for the delay associated with that rejection. In the December 30 letter rejecting those samples, the government identified 109 defects. (Some of the deviations were found on every suit and thus were counted five times.) On a superficial level, such a significant number of defects would suggest that the government acted reasonably and should bear no responsibility for the delay related to the rejection. On closer examination, however, we find that the government improperly rejected the November samples[16] and thus delayed the performance of the contract.

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16. All of these samples were destroyed by the government during First Article evaluation. DX-2268.

Appendix C

a) Bases for Second Sample Rejection

The production of a single chempro suit in the Amertex contract involved nearly 200 manufacturing operations. Some of these operations were crucial to the effectiveness of the uniforms in the event of chemical exposure. Other operations were not so closely related to the efficacy of the suit, such as the operation prescribing the stitch for finishing the raw edge of material for a pocket. Indeed, the table of defects for specification F classified over 200 potential deviations as "minor," "major," or "critical." PX-235. In its rejection of the November First Articles, the government scored 109 imperfections, 103 of which were classified as minor deviations.

In the rejection of the November First Articles, the government scored as defects numerous unreasonably picayune items. These defects included 32 instances in which a stitch margin, such as the placement of a belt loop on the trousers, was purportedly out of alignment by as little as 1/32 of an inch. Defendant also scored 13 defects for the presence of stubs, small knots of thread on the face of fabric which are inherent to the weaving process. Regarding the alleged stub deviations, plaintiff presented persuasive evidence that the government's specifications were defective in that no slubs whatsoever were tolerated in the end product but slubs were acceptable in the component fabric.

As to the other minor deficiencies, plaintiff provided compelling evidence that these deviations were most probably the result of either incorrect interpretations by the examiners or inconsistent specifications. Even government witnesses at trial conceded that the minor defects were mentioned only for advisory purposes. Tr. 4708 (Hepner) and Tr. 5875 (Marshall).

Such minor imperfections should not have been allowed to keep plaintiff's plants idle, delaying the start of mass production.

The remaining scored defects cast further doubt on the propriety of the government's rejection of the November First Articles. Specifically, Hepner testified that she identified 5 "major" defects relating to some, but not all, of the "bartacks," a particular kind of stitching.[17] Hepner claimed that after ripping apart the bartacks, she counted only 14 stitches instead of the 28 required by the specifications.

Plaintiff offered strong evidence that the number of stitches could not be counted accurately after a bartack is made because the perforations are extremely close together.[18] The evidence also supported plaintiff's contention that Amertex made all bartacks using an unvarying setting of 28 stitches via cam operated sewing machines. Tr. 2034-36 (Ludwig).

Defendant also contends that the rejection of the November samples was justified because the First Articles contained one instance in which a velcro sleeve tab was out of alignment by a quarter of an inch. At the time, the defect table classified a "sleeve tab set crookedly or poorly shaped" as minor, but a "sleeve tab and pile tape out of alignment or not able to be fastened properly" as critical. PX-235. Hepner scored one minor

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17. Hepner similarly scored 20 "minor" defects for bartacks in which she counted only 14 stitches.

18. Moreover, a person could mistakenly conclude that there were half as many stitches as there really were; that is, those experienced in textile manufacture count stitches by the number of perforations made by a needle. A novice might conclude that a piece of thread between two perforations was one stitch, whereas those in the industry would count two stitches.

and one critical defect for two deviations involving the sleeve tabs: the former for a "crooked" sleeve tab and the latter for a "1/4 inch" deviation.

The table of defects, however, neither specified the distinction between "crooked" and "out of alignment," nor prescribed any measure for tolerances necessary for mass production of the suits. There is also no evidence that the velcro tab in the First Article did not fasten; instead, in the detailed rejection letter, only a quarter inch variation in the tab was identified. Moreover, the deficient ambiguity in the table of defects was later corrected, clarifying that only if the tabs were so misaligned that they could not be fastened could such deviations be called "critical."[19] In sum, we find that had defendant acted properly in its evaluation of the First Articles, the quarter inch misalignment of the velcro tab would have been considered both minor and easily correctable.

Finally, the evidence relating to the third First Article, which was submitted on January 22, 1988, also bears on the persuasiveness of the government's witnesses relating to the November First Articles.[20] The government concluded that there were zero defects in the third set of samples, that is, that they were perfect. PX-43 (stating "[n]o departures were found; production is authorized"). At trial, however, plaintiff used the

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19. PX-127. Furthermore, the velcro sleeve specification, which had been added by P1, had not been previously verified as accurate for mass production. In fact, the velcro tab operation was corrected and adjusted several times during the life of the contract.

20. It is also noteworthy that in a later chronology of the garment, the government noted that it made specification changes on December 26, 1986 "resulting from 1st article to clarify Table of Defects such that it coincides with Table of Operations requirements." DX-59.

one suit preserved from the January submission to illustrate the disparities in the government's position. The suit was shown to have some obvious but easily correctable defects that would have caused rejection had the inspectors applied the same "no tolerances" approach as was used in the earlier submissions.

Moreover, the government's position was weakened by Hepner's insistence that in January she ignored at least five defects in the third First Article submission because Amertex's president promised that the operation would be performed properly in production. Those deviations involved the placement of a snap next to a seam in contravention of the specification's faulty requirement that the snap be placed through the seam.[21] Plaintiff's president, Leo Jacobson, convincingly testified that he never made such a statement because following the specification to the letter would have destroyed the seam of the trousers, critically damaging the functionality of the suit.[22] Furthermore, even with the deviations in the third First Article, defendant's own expert testified that he would have "bought" the samples. Tr. 5789 (Marshall). Hepner maintained that any defect was cause for rejection, even though that was not the normal practice. Tr. 4707-08 (Hepner).

All of these reasons convince us that the government acted

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21. Bud Marshall, one of defendants sewing experts, agreed that the operation could not be performed according to the specification because doing so would damage the fastener "almost 100% of the time" and also cut the stitches that hold the back seam of the pants together. Tr. 5947-48.

22. Even though this specification requirement was plainly defective, it took the government nearly fifteen months to transmit to Amertex formal permission to move the location of the snap. PX-118.

improperly in its outright rejection of the November First Articles. We are persuaded that defendant should be held accountable for the delay damages resulting from its application of a "no tolerances," or perfection, standard during the November First Article inspection.

b) Assigning Legal Responsibility for the Second Rejection

Aside from disputing plaintiff's factual evidence, defendant attempts to justify the rejection of the November samples with essentially two legal arguments. First, defendant contends that it is not responsible for unreasonably delaying the project because plaintiff has not established by "well-nigh irrefragable proof" that the government acted in "bad faith." Second, defendant claims that it acted reasonably because it could reject due to the presence of any defect. These contentions merit additional discussion.

Defendant seems to suggest that, even if the government acted unreasonably in rejecting the samples and delaying production, in the absence of incontrovertible bad faith, plaintiff cannot prevail on the First Article issue. Proof of bad faith, however, let alone "well-nigh irrefragable proof" of malice, has never been the touchstone for proving entitlement to an equitable adjustment for damages caused by delay and disruption. Instead, to recover for delay, plaintiff must prove that defendant unreasonably delayed the completion of the contract, the defendant proximately caused the delay, and that plaintiff's costs were increased as a result. *See, e.g., Mega Constr. Co. v. United States,* 29 Fed.Cl. 396 (1993). Reasonableness, not bad faith, is the essence of delay analysis. *Cf. J.D. Hedin Constr. Co. v. United States,* 171 Ct.Cl. 70, 347 F.2d 235 (1965).

Furthermore, the cases cited by defendant are not delay and disruption cases, but are cases involving allegations of bad faith termination. *See, e.g., Sanders v. U.S. Postal Service,* 801 F.2d 1328, 1331 (Fed.Cir. 1986) (citing *Kalvar Corp., Inc. v. United States,* 211 Ct.Cl. 192, 543 F.2d 12980 (1976), *cert. denied,* 434 U.S. 830 (1977)). The strength of *Kalvar's* "well-nigh irrefragable proof" language appears to have been restrained by the Court of Appeals for the Federal Circuit's subsequent conclusion that a contracting officer's decision to terminate a contract for default may be set aside for reasons short of bad faith. *Darwin Constr. Co., Inc. v. United States,* 811 F.2d 593 (Fed.Cir. 1987). Even in a termination claim, the circuit court stated: "There is nothing in these decisions to support the Government's contention that the aggrieved contractor must add another layer of proof by demonstrating that the decision was also made in bad faith." *Id.* at 598. Similarly, there is no support for extending the bad faith burden to the settled law relating to proof of fault and injury in the delay claim regime.

As to defendant's second assertion, that the government is entitled to reject outright the First Articles based on the presence of a single deviation, we are similarly unpersuaded. The contract itself is internally conflicting. For example, the specifications contain a clause that states that the samples "shall be examined for the defects specified in 4.4.3.1 and 4.4.3.2. The presence of any defect shall be cause for rejection of the First Article." PX-235. Yet, the contract also states that there are three options for First Article submissions: accept, conditionally accept, or reject. DX-2001. The contract further indicates that unconditional or conditional approval does not relieve the contractor of the obligation to comply with the specifications during production. DX-2002. If rejection were mandated by the presence of any defect, then the availability of conditional approval would be devoid of meaning. One contractual provision, like a statutory

provision, should not be read in a way that renders accompanying provisions superfluous. *See, e.g., Northwest Marine Iron Works v. United States,* 203 Ct.Cl. 629, 639, 493 F.2d 652, 657 (1974).

Moreover, regardless of the superficial clarity of the "any defect" language, the court is not bound to follow the literal language when doing so would lead to absurd results. *Id. Cf. United States v. Wilson,* 503 U.S. 329, 334 (1992); *United States v. Providence Journal Co.,* 485 U.S. 693, 708, 710 (1988) (Stevens, J., dissenting); *Best Power Technology Sales Corp. v. Austin,* 984 F.2d 1172, 1175-76 (Fed.Cir. 1993). In the case at bar, the production of a single chempro suit involved numerous operations and hundreds of potential deviations that were graded by their severity. Accordingly, it would be unreasonable, if not absurd, to interpret the contract as giving defendant unlimited power to deny acceptance, or conditional acceptance, based on the presence of a single imperfection, no matter how slight.

The appropriateness of this construction of the contract is buttressed by the contract's Default Clause, which gives the government the right to terminate the contract for default based on the rejection of a First Article. DX-2002. Although defendant did not default terminate the contract at this early juncture, the severe implications of rejection warrant our approach to reviewing First Article evaluations. In termination cases, the ability to terminate for any deviation in the items delivered has been modified by the "substantial compliance" rule. *See, e.g., Radiation Technology, Inc. v. United States,* 177 Ct.Cl. 227, 232, 366 F.2d 1003, 1005 (1966); *see also Appeal of U.S. Optics Corp.,* 75-2 BCA 11,603, ASBCA No. 18,972 (A.S.B.C.A., Nov. 25, 1975). In general, this rule modifies the doctrine of strict conformity, which, when "coupled with a summary termination power, would place in the hands of a contracting officer an unfettered right to reject . . . ." *Radiation Technology,* 366 F.2d

at 1005. The substantial compliance rule strikes a balance between the competing rights of both parties.

The Armed Services Board of Contract Appeals has had frequent opportunity to examine this rule in the special context of First Article rejections. Over the past three decades, the Board has addressed dozens of First Article rejection cases and has refined the substantial compliance rule into the "correctable" (also known as the "easily correctable") standard. The Board has consistently held that:

> [T]he Government may not demand strict compliance with the specifications [with respect to First Articles] as with supplies tendered for final delivery. The purpose of a First Article is to discover defects. Therefore, if defects are discovered and are easily correctable in production the Government may not reject the [samples].

Appeals of Defense Technology Corp., 91-3 BCA 24,189, ASBCA No. 39,551, ASBCA No. 40,308 (A.S.B.C.A., July 17, 1991) (citation omitted). Accordingly, "[d]eficiencies in a first article that are correctable in production are not a valid basis for an outright disapproval . . . ." *Appeal of Advanced Precision Industries, Inc.*, 89-2 BCA 21,597, ASBCA No. 34,676 (A.S.B.C.A., Jan. 9, 1989); *see International Tel. & Tel. Corp., ITT Defense Communication Division v. United States*, 206 Ct.Cl. 37, 509 F.2d 541 (1975). Indeed, in a case strikingly similar to plaintiff's, the Board applied this standard in favor of another chempro suit manufacturer whose second set of First Articles had been rejected. *Appeal of Winfield Mfg. Co.*, 88-1 BCA 20,353, ASBCA No. 34,901 (A.S.B.C.A., Nov. 19, 1987).

Appendix C

The Board's well-reasoned approach to reviewing decisions to reject First Articles is equally applicable to the controversy at bar.

Additionally, rejecting the samples was especially inappropriate in light of the government's election to use a five unit, as opposed to an expanded, First Article. The government's Chief of Technical and Quality Assurance Division, Director of Clothing and Textiles had stated: "The ultimate purpose of the first article is to demonstrate that the contractor possesses the technical expertise necessary to produce the specification item and to ensure a product with requisite quality." PX-287. On cross-examination, Hepner, the quality assurance representative who made the decision to reject the November First Articles, concurred that this was in fact the purpose of a small-sample First Article. Tr. 4701. The government inspectors apparently ignored both this purpose and the well-settled "easily correctable" standard in withholding approval of the November First Articles.

Although the evidence at trial was conflicting, we are convinced that all of the defects identified were easily correctable and not significant. Therefore, we find that the government acted unreasonably and improperly in rejecting the second First Article submission. The improper rejection resulted in a 53 day delay in the authorization of production and this entire amount is charged to the government.

c. Other Significant Events at the End of Year One

During the First Article process, the government informed Amertex that several changes to the specifications were in process, including a correction for performing the sleeve tab

operation. PX-35. The changes were not issued before the end of the first year of the contract and did not arrive until well after mass production was authorized by the government.[23]

Additionally, Amertex informed the government that the specifications did not provide an adequate method for spot or stain removal. PX-28. Several spots had been scored on the September First Article submission and, accordingly, the contractor was concerned about meeting the specification requirement for cleanliness. Also, during handling, the charcoal lining had an inherent tendency to generate charcoal dust that smudged the outer shell. In January 1986, defendant provided a soap and water method for removing stains, but noted that great care had to be taken with the garments because any soap residue would destroy the water resistant finish. PX-33. Ultimately, this stain removal method would prove to be inadequate for many of the marks inherent to the mass production of such a garment, including some which were caused by an interaction between the required quarpel coated thread and the specified fabric components.

In addition to these issues, on January 17, 1986, defendant modified the specifications to increase the allowable weight of the charcoal lining.[24] This modification, P6, implicitly recognized the unavoidable increase in weight caused by the modified specification requirements. In fact, the letter recommending the weight increase stated: "These changes

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23. These modifications were formally incorporated in the contract in June 1986 by modification P7. DX-2002.

24. The maximum allowable weight per square yard of the lining cloth was increased from 9.5 ounces to 10 ounces. The modification also corrected two other inconsistencies in which the specifications contradicted the patterns or were otherwise inadequate. PX-40.

[were] required to eliminate the unnecessary restrictiveness of the existing requirements." PX-29. P6, a unilateral modification, also included a clause providing that no increased costs or delays would be allowed for this change. Plaintiff did not sign that modification nor was plaintiff asked to do so.

Moreover, as noted above, defendant rejected Amertex's second First Article submission on December 30, 1985. PX-32. Amertex received provisional approval of its third set of First Articles on January 28, 1986,[25] but did not receive authorization to proceed until February 24, because the government needed to complete additional testing of the samples. During this period, Amertex notified the government that its preparatory work had been delayed as a result of numerous government actions during the first year. PX-37. On January 28, 1986, Amertex estimated that its build-up schedule had been delayed by 105 days more than the 90 days allowed by modification P3. Therefore, plaintiff requested a delivery extension for this amount of time, with final delivery to be made by July 13, 1987. PX-37. Defendant did not issue an official delivery extension until nearly fifteen months after this request.

Additionally, while awaiting First Article approval, Amertex began small-scale production build-up at its own risk. By the time that authorization for mass production was received on February 24, 1986, Amertex had cut approximately 59,358 units

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25. At that time, Amertex advised the government that it "understood" the changes made through modification P7. At the same time, Amertex also advised the government that the company was in the process of quantifying the economic impact of changes and noted the delay to preparatory work caused by the modifications. Additionally, as Amertex later stated, once mass production began, the discrepancies and impossibilities started impacting the company's ability to meet the plan. DX-3233 at 4; *see infra.*

of butyl,[26] 72,118 units of nyco for both coats and trousers, and had sewn 14,670 nyco coat outer shells and 15,670 nyco trouser outer shells. Because of the deficiencies in the lining specifications, Amertex had only cut 50 units of lining prior to First Article approval. However, because First Article approval was on the critical path of production during this period, any delay in lining production caused by defective specifications did not yet manifest in delay to the project as a whole.

d. Distribution of Delay in Year One

There were 154 delay days during the 364 day period encompassing the first year of the contract. D'Onofrio acknowledged government responsibility for 90 days of delay related to the first two modifications of contract and four delay days due to tardy evaluations of the First Articles. Of the remaining 60 days, the court finds that plaintiff is solely responsible for seven delay days for late submission of the November First Articles. We further find that the government is solely responsible for 53 delay days resulting from the unreasonable rejection of the November First Articles. Accordingly, for the first year of production, the government was solely responsible for 147 days of delay, and Amertex was solely responsible for seven days.[27] This delay and disruption

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26. Units are used rather than yards of material for the purpose of tracking production of the garments. To say that 59,358 units of butyl were cut, for instance, indicates that Amertex had cut sufficient butyl for the production of 59,358 chempro suits.

27. From this point onward, we divide delay into two categories: first, that caused solely by the government, and second, that caused either solely by Amertex or concurrently by both parties. Only delay caused *solely* by defendant is compensable; thus, it is unnecessary to differentiate with respect to delay not solely attributable to defendant.

meant that Amertex and its subcontractors had almost half a year of "down-time" before receiving authorization to begin full-scale production.

2. Year Two

Once Amertex received authorization to proceed in late February 1986, the chempro suit production was fraught with mistakes and disruptions caused by both parties. Overinspection and inadequacies in the specifications, however, were not the only causes of production difficulties. The government also experienced substantial delays in approving butyl because of complications at its testing site, Aberdeen Proving Grounds (Aberdeen). Amertex, too, experienced problems in its cutting operations that adversely affected its sewing production.

Furthermore, at the beginning of the second year of the contract, some financial issues arose which implicate both the delay and termination claims. Ultimately, Amertex's cash-flow status provoked the break-down of the parties' contractual relationship. The contractor's financial difficulties began to crystallize near the start of the second year. At that time, two financial issues were outstanding: compensation for long-lead time items (LLTI) and also for P1 and P2 changes.

First, in terms of LLTI payments, the manufacture of chempro suits involved the coordination of four functional categories of production: materials supply, materials cutting, sewing, and packing. Amertex had obtained approval in amendment A1 to begin essential pre-production work, such as materials purchase, prior to First Article approval. The government also authorized advance progress payments to cover this work and it set-aside about $7 million to do so.

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The LLTI charges were subject to the same reimbursement rate as ordinary progress payments which were available after First Article acceptance. The contract provided that Amertex was entitled to progress payments up to 95% of incurred costs on the contract price of $96,345,493.80. In addition to Amertex's own equity, plaintiff arranged for a $5 million line of credit with Banco Popular de Puerto Rico (Banco Popular) to cover the remaining 5%.

By the time Year Two began and First Article approval was obtained, Amertex had incurred more than $16 million in expenses for materials alone. DX-2273. This amount was exclusive of fixed and variable costs related to preparing facilities for production, employing workers, making the First Article samples, and performing research and development related to complying with the P1 and P2 modifications, as well as Amertex's expenses for manufacturing in advance of authorization to proceed. By the first week of January, Amertex had received about $5 million toward expenses for LLTIs. Another $1.5 million payment request was being processed but had not yet been paid.

On January 10, 1986, Amertex requested (with itemized documentation) an additional long-lead time progress payment for the $9.7 million dollar gap between sunk material costs ($16,741,701) and the amount initially authorized for early purchase of essential materials ($6,994,501). DX-2273. The government disregarded this request, stating in internal commentary that this large gap in funding for materials costs "won't make any difference once [First Article] approval comes through." *Id.* As described earlier, the First Article sample was not approved until February 24, 1986, the one-year anniversary of the contract. Two more months would pass (until April 28, 1986) before Amertex received progress payments that covered

the amount of its January request. As noted, that $16 million covered only material purchases; Amertex was financing the remainder of its mounting expenses apparently without progress payment reimbursement up to that point.

Second, it is noteworthy that at the outset of Year Two, defendant had not finalized the price adjustment that Amertex was due for the changes in P1 and P2. Perhaps the most significant aspect of these changes related to the imposition of the hydrostatic test to verify the formulation of state-of-the-art slurry for the polyurethane foam. Defendant was aware, through its frequent consultations, of the significant time and money expended by Amertex's subcontractors in their struggle to manufacture a cured polyurethane foam that conformed to the requirements of that test, especially in conjunction with the other lining specifications such as the weight requirement and the ball-burst and the CCL_4 tests."[28]

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28. The modified specifications for the state-of-the-art charcoal lining also hampered Amertex's ability to secure approved lining for introduction into the production line. Shortly before production authorization, the government eliminated the "unnecessar[ily]" restrictive weight requirement for the lining material. PX-29. However, lining produced according to the specifications continued to fail other testing requirements. Tr. 2880-86 (Sallavanti).

To pass the new hydrostatic test requirement, the lining had to be cured at high heat. Tr. 3432-34; Tr. 2878-81. The government's expert on the lining cloth acknowledged that the specifications relating to the burst requirement were flawed. Tr. 4250-51 (McKinney); DX-2351. After months of problems with the lining specifications, the government changed the ball-burst test requirements in recognition of this problem. DX-2002. Issued July 23, 1986, unilateral modification P12 noted that any costs and delay would be finalized by the ACO. No adjustment specific to P12 was ever issued.

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Even though P1 had been issued nine months before First Article approval, Amertex had not received even a provisional adjustment by the time Year Two began. Five months prior to First Article approval, Amertex submitted a cost estimate of $11,210,210 for P1 and P2 changes. This estimate included disbursed costs, such as research and development for the lining, and also prospective costs, such as materials and labor related to the substitution of the velcro fasteners. That estimate did not purport to cover any delay compensation relating to the issuance of P1 and P2. The government had not finished its review of the proposal and audits of the prime contractor and subcontractors by the time of First Article approval.

Shortly after the start of Year Two, Amertex revised its estimate of P1 and P2 costs to $15,662,531. Amertex did not receive a provisional adjustment for costs related to P1 and P2 until nearly two years after production was authorized. (Eventually, in January 1988, the government allowed a provisional increase in the contract price for those first year modifications in an amount over $8 million, which was finalized in September 1988 at $12.9 million.) Thus, Amertex began Year Two without an agreement on compensation for the changes issued in Year One and the government would not finally definitize those changes until just months before the default termination, which was based in part on Amertex's financial condition.

Although these financial disagreements do not entitle Amertex to delay compensation, they do shed light on the context in which production build-up began. Due to the lack of prompt compensation for these expenses combined with the 154 delay days in Year One, Amertex and its subcontractors began Year Two under financial strain. This financial stress grew worse as those 154 delay days stretched into nearly three years worth of

delay and disruption during the life of the chempro contract. We next determine how many of the 952 delay days (between award and termination) occurred during the year following First Article approval.

a. Delay Days in Year Two

The second year of contract performance covers the period from February 25, 1986 through February 28, 1987. During this period, 369 days elapsed, but Amertex made very few days of progress toward completion of the contract. Based on the expert testimony concerning this issue as well as the production records, we find that there were 304 delay days during Year Two. Thus, Amertex took a year to manufacture the quantity of chempro suits that it had originally planned to make during about two months of production time.

The parties presented sharply conflicting theories regarding responsibility for the delay. The evidence indicates that both Amertex and the government contributed to the delay and disruption during the second year of the contract. Nonetheless, Amertex provided strong evidence of the government's delay separate and apart from its own (even though plaintiff's experts underestimated the amount of delay caused by company mistakes). Plaintiff proved defendant's sole responsibility for a portion of the delay in Year Two. The causes of delay in this period may best be understood by examining the production circumstances in each of the two halves of the year. In the following sections, we describe the factual predicates to our apportionment of the 304 delay days.

1) The First Six Months of Authorized Production

From February 25, 1986 through August 31, 1986, 188 days

elapsed. During these six months, Amertex's manufacturing processes moved forward at a very slow pace. According to the solicitation and contract plan, Amertex was to deliver 201,335 suits to the government within about six months of First Article approval. Amertex's actual production levels during this six month period fell far short of those expectations.

Indeed, according to the contract schedule unilaterally imposed by modification P3, Amertex was required to deliver more than one million suits by the end of August. P3, the 90-day extension, did not include all of the excusable delay in Year One nor, obviously, did it contemplate any schedule adjustment for excusable delays encountered in the first half of Year Two. The rapid delivery schedule imposed by modification P3 was consistent, however, with the parties' expectations that the contract involved an expedited production of chempro suits. To say the least, Amertex's progress in Year Two was anything but expedited.

We find that plaintiff experienced 155 delay days in the first half of Year Two. That is, Amertex made only about 33 days worth of progress toward its production goals during roughly half a year's time.[29]

Attributing responsibility for delay in a case such as this is not susceptible to surgical precision. Instead, assigning fault for the delay causation here involves a subjective but reasoned assessment of the totality of the evidence introduced at trial.

a) Actual Production Levels

Amertex's production strategy planned for staggered

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29. Specifically, we make the following delay day/progress day findings: February 25 to March 31, 30 delay days/5 days of progress; April, 28/2; May, 26/5; June, 25/5; July, 22/9; August 24/7.

production such that a sufficient quantity of materials would be cut in order to support the sewing production lines and likewise a sufficient quantity of sewn material would be "built-up" to support the packing operations. In addition to securing an adequate supply of materials, the strategy to produce 2.4 million chempro suits involved the coordination of materials cutting, sewing, and packing. Cutting encompassed four main categories: butyl cutting, nyco cutting (coats), nyco cutting (trousers), and charcoal lining cutting. Sewing included five main categories: sewing "part-A" (outer shell) coats, sewing part-A trousers, sewing linings, sewing "part-B" (joining linings and outer shells) coats, and sewing part-B trousers. Packing involved three primary categories: interim packing of finished units in Puerto Rico, final packing and testing in the continental United States, and delivering the suits to the government.

In this way, the Amertex plan called for a build-up of about three months in materials cutting before the target output of 200,000 cut parts per month in each of the four cutting categories would be reached. Similarly, Amertex planned to build-up sewing production to about 200,000 sewn parts per month in each of the five sewing categories before the target output of 200,000 in each grouping per month would be reached.

Specifically, Amertex made a reasonable plan that would have fulfilled the contractual schedule and consisted in essence of the following synchronized schedule: First, for butyl and nyco cutting to proceed at the same rate; then, once about 100,000 "kits" of butyl and nyco were prepared, for the use of such kits in the outer shell sewing; at that same time, for lining cutting to begin; then, once about 150,000 units of lining were cut, for lining sewing to begin; then, once about 100,000 outer shells were accumulated, for the joining of sewn linings and outer

shells to begin; finally, for packing operations to begin once about 100,000 suits were completed.

During the first half of Year Two, Amertex was not able to fulfill this scheduling plan. Amertex did, however, try to alleviate the effect of the problems in Year Two by commencing its sewing operations in advance of the plan's build-up schedule.

To illustrate our discussion of the causes of slow production during this six month period, we recap the production outputs at the start of Year Two. Amertex tracked and coordinated the productive output and also recorded cumulative production levels by month.[30] The following table shows the cumulative production in units at the end of the months that demarcate the parameters of this part of Year Two, February and August 1986:

Table 1: Cumulative Levels of Production
First Half of Year Two

Category	2/28/86	8/31/86
Cut Butyl (Sets)	59,358	265,602
Cut Nyco (Coats)	72,118	327,378
Cut Nyco (Pants)	72,118	327,378
Cut Lining (Sets)	50	328,562
Sew Outer shells A (Coats)	14,670	121,863
Sew Outer shells A (Pants)	15,670	115,328
Sew Linings (Sets)	0	48,144
Sew Linings & Shells B (Coats)	0	408
Sew Linings & Shells B (Pants)	0	18,744
Interim Packing	0	0
Final Packing & Testing	0	0
Delivery	0	0

30. For consistency, cumulative production at the ends of months is compared, even though Year Two began on February 25, 1986.

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As the table shows, butyl cutting lagged behind nyco cutting for coats and trousers at the start of Year Two. By March, Amertex cut 59,358 units of butyl, which was all but 4800 units of the butyl that had been approved by the end of February (64,158 units). PX-297. Also, due to problems with the lining specifications, almost no lining material was available for cutting or sewing prior to authorization to proceed. Amertex's subcontractors were able, however, to perform some part-A work, that is, to sew the nyco and butyl cut parts into outer shells. The lack of lining precluded any part-B work, which involved the attachment of sewn linings to sewn outer shells.

From February through August, Amertex cut about 200,000 units of butyl. Due to delays in butyl testing at Aberdeen, Amertex had almost no butyl available for cutting in April, none in May, June, and most of July. Amertex did cut about 150,000 units in March and about another 50,000 in July. We examine the butyl-caused delays in greater detail in the next section.

Because of the government's delay in butyl approval, Amertex's monthly nyco cutting levels surpassed butyl cutting in every month but March. This situation disrupted plaintiff's production schedule, which planned for butyl and nyco cutting to proceed at the same pace. Synchronicity in these items was necessitated by the specification's requirement that the outer shell be constructed of nyco reinforced with butyl. During the first half of Year Two, the rate of nyco cutting grew for about three months, slowed in June, progressed in July, and then slowed again in August. Nonetheless, by August 31, 1986, Amertex had made a cumulative cut of 327,378 units of nyco for coats and the same quantity for trousers.

According to the plan, butyl and nyco were to produced in parity in terms of units. (Each suit required about three yards of

nyco for each half yard of butyl.) Moreover, regardless of the contractor's plan, the specifications required that the outer shell consist of nyco with butyl reinforcements in several locations.

Similarly, due to the limited shelf life of the charcoal lining material, it was not practical to expedite the linings for integration into the chempro suits without an assured availability of butyl. Lining manufacture and cutting had to be closely monitored to calibrate lining sewing with part-A outer shell sewing so that these operations would dovetail into part-B procedures that joined the lining with the outer shell. Because of the drought in butyl supply, lining cutting inevitably eclipsed butyl cutting. Lining cutting grew steadily during the first six months of production, with a slight drop in July. By the end of August 1986, Amertex had 328,562 units of lining, a negligibly greater quantity than cut outer shell units and more units than cut butyl.

The sewing of the outer shell coats and pants by Amertex's subcontractors, Lajas and Apparel Art, proceeded at a very slow pace during the first three months of Year Two, increased somewhat during June and July, and dropped slightly during August.[31] Sewing part-A required parity in available nyco and butyl cut parts.[32] Additionally, the level of sewing operations

31. After the nearly half-year of government caused delay in Year One, Amertex's relations with its subcontractors were strained at the outset of authorized production. Frustrated with the amount of delay and disruption experienced on the contract, Lajas laid off workers in May. Because Lajas was responsible for the part-A sewing of trousers, this layoff caused a disparity between the level of part-A production of coats versus pants.

32. PX-240. Butyl was required for six of the 15 primary part-A categories of coat operations and for three of the 13 primary part-A (Cont'd)

had to be monitored in order to maintain a sufficient backlog of materials so that the assembly line would not run out of supplies. During times of material shortage, Amertex explained that the sewing subcontractors had a rational preference to keep production lines flowing at a slow pace rather than to speed through all available cut work and be required to cease production, losing specially trained workers to other apparel companies.

By the end of August 1986 (i.e., during the first six months of authorized production), Amertex had completed the sewing of 121,863 part-A coat outer shells and 115,863 part-A trouser outer shells. This cumulative quantity is approximately the amount that the contractor originally planned to build-up during the first five and a half weeks of production.

Amertex did not begin to sew linings until April 1986. For the remaining months in the first half of Year Two, Amertex sewed on average 11,500 lining sets per month. This lining sewing was ahead of schedule in that originally the company had scheduled lining sewing to begin once there was a backlog of about 150,000 lining cut pieces to support the assembly line. Despite this "early" start, by the end of August 1986, Amertex had completed only slightly more sewn lining sets than it had planned to produce in the first two weeks of build-up of this item.

During the first half of Year Two, Amertex also began its part-B sewing, attaching sewn linings to sewn outer shells, ahead

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categories of trouser operations. *Id*. Amertex's witnesses established that part-A work could not proceed without sufficient quantities of butyl in the sewing assembly line. In each coat, for example, butyl was needed for the atropine pocket protective piece, the under sleeve elbow patch, the sleeve pocket protective piece, the top sleeve elbow patch, and the chest pocket protective pieces. *Id*.

of its production plan in terms of backlog of material to support the assembly line. Yet, due to the reduced levels of production in the other categories, Amertex did not start part-B work until July, four months after authorization to proceed. Even then, the specification deficiencies on the coat stalled part-B coat production work to such an extent that only 408 coats had been sewn by the end of August. In contrast, although also proceeding at a sluggish pace, 18,744 part-B trousers were completed by August 31, 1986. For both part-B garments, there was an insufficient amount of part-A and lining sewn work to feed full-blown production build-up.

Furthermore, because few sets of coats and pants were completely sewn by the end of August, plaintiff did not proceed to pack, present for final testing, or deliver any garments during the first half of Year Two. In these ways, Amertex's production output fell far short of its own plan and the contractual delivery schedule. During this period, however, the government issued no "show cause" letters based on the contractor's slow production or failure to fulfill the delivery schedule in modification P3.

b) Assessing Responsibility for Delay

Each party contends that the other was the primary cause of delay between February 25, 1986 and August 31, 1986. Plaintiff's witnesses placed great emphasis on the effect of the lack of government approved butyl on the production processes, asserting that butyl availability was controlling. In contrast, defendant's scheduling and production experts theorized that almost all of the delay was due to defective cutting slowing the sewing production and that none of this delay was attributable solely to the government.

We next examine the merits of the parties' contentions about

responsibility for delay by focusing on the three key issues of this period: the effect of tardy butyl testing, the effect of bad cutting on sewing operations, and the effect of changes and inadequacies in the specifications on production in general.

(1) Butyl Issues

The specifications referred to in the contract provided that Amertex was required to submit samples of butyl for toxicological testing at Aberdeen before the material could be used in the production of the chempro suits. DX-2003. The contract also mandated that defendant take no more than 30 working days to test and approve butyl. DX-2002; DX-2003. Butyl was a key component in the initial operations for the chempro outer shell. Each outer shell kit required sufficient nyco and butyl cut pieces for one chempro suit. Tr. 472-73 (L. Jacobson). Butyl was required for six of the 15 primary part-A divisions of coat operations and for three of the 13 primary part-A divisions of trouser operations.[33] In this way, the availability of butyl for cutting could pace the cutting of nyco, as well as the sewing operations.

Since before First Article approval, Aberdeen had regularly failed to approve butyl within the contractual time limit and had approved butyl at an unpredictable rate for purposes of planning for butyl availability.[34] This sporadic "pattern"

33. PX-240. Amertex's witnesses established that part-A work could not proceed without sufficient quantities of butyl in the sewing assembly line. In each coat, for example, butyl was needed for the atropine pocket protective piece, the under sleeve elbow patch, the sleeve pocket protective piece, the top sleeve elbow patch, and the chest pocket protective pieces. PX-240.

34. The term "to approve" is used to mean both "to test" and "to

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continued during the first six months of Year Two. Following authorization to proceed with production, the government made a surge in butyl approval. Amertex, through its subcontractor Gentex, cut 151,680 units by the end of March 1986. PX-297 at 12. Gentex was able to rapidly integrate this large quantity of butyl into its cutting assembly lines even though Amertex's production plan did not contemplate cutting that much butyl in a thirty day period until about the third month of production build-up.

Gentex cut the remaining approved butyl (1,920 units worth) during the first week of April. PX-297 at 12. The government failed to approve any more butyl in April. Gentex kept Amertex and the government informed that the delays in butyl testing would restrict the subcontractor's cutting output and, consequently, the overall delivery schedule. *See, e.g.*, DX-2377. Gentex repeatedly asked Aberdeen to "expedite" the testing of butyl. As of April 29, 1986, Amertex was awaiting approval of a quantity of butyl sufficient to incorporate into more than 200,000 outer shells.[35]

In May, no butyl was approved. Gentex wrote Amertex advising that "the current status of testing at Aberdeen will result in further serious delays in receiving approved material at Gentex for production, and that unless corrected, will put the entire production system at risk . . . ." PX-53. Amertex then contacted DPSC, requesting assistance in expediting the testing. DPSC

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accept." The government's tardiness in approving butyl was not due to inadequacies or deviations in the materials tested. Only one lot of butyl experienced some testing failure during this period.

35. Each suit required about a half-yard of butyl to be stitched into key areas. Tr. 474.

then contacted Aberdeen about the "inordinate delays" and advised that the delays could "result in breach of contract."

Despite these efforts, no butyl was approved in June. By that time, Amertex elected to allow the cumulative cutting of nyco to exceed the cumulative cut of butyl in order to put some additional material into the sewing production lines. To the extent that Amertex tried to mitigate the lack of butyl through preparing kits without a key component, plaintiff's assembly lines could make only limited progress in sewing. Butyl was, indisputably, an integral part of the manufacturing of the chempro suits at the outer shell stage; no matter how much nyco could be cut and shipped in advance of the butyl, the design of the chempro outer shells meant that Amertex's subcontractors could not complete more outer shell units than butyl units were available.

At the beginning of July, Gentex reiterated the production delay impact of having no butyl available. The subcontractors had also been complaining about the lack of sufficient quantities of butyl for sewing in the preceding three months. In late July, defendant released 67,044 units of butyl. PX-65 (noting that the butyl situation had restricted output severely); PX-297. When butyl finally became available in July, Amertex shipped butyl cut pieces to its assembly lines by air-freight. PX-68. Even though 280,002 units of butyl had been approved for cutting and Gentex had cut 265,602 units by the end of July, nyco cutting remained ahead of butyl cutting, with 291,858 units in the former. By the end of the first half of Year Two, butyl cutting was behind nyco cutting by about 60,000 units.

By the end of August 1986, butyl had only been approved in two out of six months. Butyl testing had been delayed to such an extent that shortly after the end of this period (in September

1986), the government created a surge in butyl approval in the amount of more than a half-million units.

The extensive butyl delays in this period adversely affected the unofficial delivery schedule the parties had been following in lieu of the P3 schedule. Amertex had kept the government apprised of the way in which butyl was slowing delivery, as reported in a government memorandum:

> Initial delivery due 1/86. Contractor claimed excusable delay, agreed to revised schedule commencing 8/86 .... Tox[icological] testing of butyl coated nylon was delayed (spring '86) when [the Environmental Protection Agency] shut down test lab at Aberdeen ... for about two months .... Amertex claimed additional excusable delay as a result [with delivery commencing] 11/86.

PX-71 (noting also that there was a "large number of spec[ification] changes issued").

In sum, during the first six months after First Article approval, the butyl approval problem stunted plaintiff's ability to build-up its production levels to the point needed to expedite the production of the garments. This situation not only delayed performance of the contract but was a violation of the explicit provisions of the contract itself. Yet, throughout the life of the contract, defendant continually exceeded this contractual time limit.[36]

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36. For 22 of 44 months, no butyl was approved. PX-297. (Amertex's first submission of butyl for testing occurred in late July 1985, almost

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This pattern of sporadic approval of butyl followed by months with no approved butyl wreaked havoc on Amertex's ability to plan production, maintain its cutting operations, retain employees, and achieve production efficiencies. Tr. 786-87 and 474-77 (L. Jacobson); Tr. 7673-76 (Pullo); Tr. 2505-06; PX-291. During the first half of Year Two, Amertex immediately cut most butyl that was approved yet spent nearly three months with no butyl to put into the production line.

A year and a half after the worst of the butyl testing delays, the government wrote in a contract newsletter:

> [C]ontinued Government delays in testing of Butyl Fabric at Aberdeen . . . had caused this material to become the pacing item for contract performance. As long as this condition persists the Government is exposed, not only to excusable delays in product delivery, but also to claims for delay costs already estimated by the contractor to exceed $7 million.

PX-284.

During the first half of Year Two, butyl testing delays prolonged the performance period of the contract; such delays to the program caused by slow butyl approval were not subsumed by or entirely concurrent with other problems on the contract.

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contemporaneously with contract amendment A1 which authorized essential pre-production work in advance of First Article approval.) Testing times ranged from a low of five days to a high of 270 days with a mean testing time of about two months. DX-3337 at 256-57. Only 12 of the 74 lots submitted were tested within 30 days. *Id.*

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The lack of butyl for cutting had a delaying impact that was of a different duration and magnitude than the other obstacles encountered by plaintiff. Indeed, had Amertex been efficient in all other operations, contract performance still would have been substantially delayed and the government's tardy butyl approval would have been responsible for almost all of that delay. However, as the following discussion reveals, Amertex did not achieve close to optimal production, and therefore the amount of delay for which the government is solely responsible is diminished significantly. We find the government solely responsible for 70 delay days, less than half of the delay in this period.

(2) Poor Cutting and Its Effect of Sewing Levels

The government presented strong evidence, consisting in part of contemporaneous correspondence, that Amertex's production was delayed due to poor cutting. The evidence shows that a small, but nevertheless deleterious, percentage of the fabric was cut improperly. Additionally, some of the cut parts had inadequate surveillance marking. These cutting problems slowed plaintiff's sewing operations and aggravated the already strained environment in which Year Two began. Some margin of error is, of course, inherent in the mass production process, especially at the beginning of a manufacturing operation. Yet, both the degree and persistence of the cutting problems on the chempro contract exceeded the expectations of all participants. These cutting problems were a substantial cause of delay in this period in that they controlled the rate at which the already low supply of cut parts could be utilized for the production of sewn units.

The cutting problems were present before the outset of Year Two. *See, e.g.*, DX-2281 (describing problems including imprecise cutting of small parts like pockets and flaps). Amertex

had even received a "quality deficiency record" (QDR) for the presence of some defective parts cut smaller than pattern, chest pockets in particular. DX-2301. As stated earlier, however, these problems were not "critical" in terms of delay prior to authorization to proceed.

Two days after First Article approval, Amertex wrote to its cutting subcontractor, Gentex, describing some of the problems and "strongly suggest[ing] that . . . a Gentex representative come to Puerto Rico as soon as possible . . . . If they are not corrected soon, these problems will only get bigger and costly." DX-2312. Those cutting problems included misplaced drill holes and poorly cut small parts such as pockets and flaps, including parts that had excess selvage.[37] There were also problems with notches being omitted or cut poorly. DX-2314. Unfortunately for all concerned, those cutting problems were not corrected promptly.

In our evaluation of delay, we find highly significant a memorandum by one of the Gentex representatives who went to Puerto Rico in response to Amertex's request. DX-2327. In that March 14, 1986 memo, the representative noted that "60% of the problems were actual cutting problems and 40% were material defect problems." Plainly, the contractor was experiencing a higher rate of defects than it considered to be acceptable at the time and this slowed progress.

Another observation in the Gentex memo indicated that the pace in the factory was "very low" and that it seemed as if the plants had only recently started operations. However, the representative's visit occurred only about two and a half weeks after production was authorized. Had Amertex not started some advance production at its own risk, the company would not even

37. Selvage is unusable material at the edge of a roll of fabric.

have had sewing operations on-line by that time. Because some quantity of poor cut parts was being shipped and slowing build-up, we find plaintiff responsible for some delay.

In April, the cutting problems continued. The government issued a QDR citing discrepancies relating to "inadequate incoming inspection system to detect deficiencies."[38] After plaintiff reconfigured its 100% inspection policy for cutwork, Amertex returned two cut lots to Gentex because of continued problems relating to drill holes, notches, selvage, and the precision of cuts for small parts like collars. DX-2358; DX-2362.

These problems continued to occur in May, along with some surveillance marking and pinhole problems in the linings coming from Gentex. The sewing subcontractors were distressed over the continued degree of poor cutting. For example, in late May, Amertex's subcontractor, Lajas, noted that it had suffered "a great amount of losses because of bad quality in the cut work and shading problems in the fabric." DX-2402. However, that same letter noted the adverse effect of the slow cutting rate that resulted from lack of butyl, stating "we stopped operations three times because of lack of work." *Id.*

In June and July, the problems with cut parts coming from Gentex continued. At the end of the month, Amertex complained yet again to Gentex about the "lack of acceptable quality cut parts . . . ." DX-2458. Leo Jacobson, Amertex's president, emphasized, "It is impossible to build up efficiency in this

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38. DX-2352. That QDR also noted problems such as a surveillance control number missing from "one cut part" of charcoal lining, in addition to a few other traceability issues.

manner." DX-2458. Amertex also found a sudden increase in the quantity of the lining materials being cut too small for the patterns. DX-2496. The problems with the notches and drill holes in the nyco persisted.

By August, plaintiff decided to transfer the cutting operations from Gentex to one of its own plants in Puerto Rico. DX-2528. At trial, Amertex tried to minimize the relevance of the cutting problems that culminated in its decision to terminate the cutting part of its agreement with Gentex.[39] It is possible that Amertex decided to take-over cutting operations for some combination of reasons, but we find that the evidence of cutting problems leading up to the transfer speaks for itself. The termination, or phase-out, of the cutting operations at Gentex resulted in a drop in nyco cutting, even though lining cutting experienced a 67% increase during August. Additionally, none of the 14,400 units of butyl that had not been cut in July was cut in August.

By the end of the first half of Year Two, Amertex had sewn about one-half of the butyl and one-third of the nyco into outer shells. This production output was roughly consistent with the production plan which contemplated the completion of 107,500 each of coat and pant outer shells by the time that 250,000 butyl units were cut. However, it is undeniable that part-A production was disrupted by problems in the cutting.

As noted, Amertex's production levels were so far off the contractual plan that 155 delay days occurred in this six-month period. Even if the defect rate for nyco was only about the 4%

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39. Gentex remained responsible for obtaining materials for Amertex's cutting operations and for packing the chempro suits for final shipment to the government.

figure credibly determined by plaintiff's production expert, that rate undoubtedly had an adverse impact on output.[40] This is so especially because the contract required that all fabric parts in a chempro suit be matched for shade and be traceable to the same production lots. Therefore, any poor cutting beyond the amount inherent to an efficient mass production operation impeded the sewing process. The sewing process was already slowed due to there being fewer cut parts than planned as a result of the butyl delays discussed earlier.

Perhaps more significant was the effect of problems with the lining cuts and surveillance numbers. This problem in the supply of lining cut parts resulted in a 280,000 unit gap between cut linings and sewn linings, which was about 100,000 units more than planned. The low quantity of linings then delayed the start of part-B sewing. Amertex's own documents note that "70% of [lining] work being processed was not acceptable" in late July. DX-2458; DX-2496.

Ultimately, Amertex billed Gentex $75,991.88 for direct and indirect costs associated with butyl cutting. DX-3346. Amertex excluded about $3 million worth of costs from its delay and disruption claim for delays caused by problems in the materials during the life of the contract. Tr. 8175 (Madera).

Without engaging in insoluble hypotheticals, we note that had there been no butyl testing delays slowing the cutting of all materials, the unacceptably high percentage of cut part

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40. We assume, without deciding, that the error rate for nyco was at least 4% and exceeded the amount contemplated by the parties to the contract as inherent to mass production. The specific defect rate is not relevant since the inadequacies in the cut parts delayed performance regardless of the percentage of the problem.

inadequacies would have affected any increased level of cutting that would have been possible. Indeed, due to the problems with cut parts, we are persuaded that more than half of the delay to the completion of the contract occurring during this period cannot be attributed to the sole responsibility of the government. However, we are not convinced that the problems with the cut parts would account for all of the delay in this period especially in light of the butyl situation discussed earlier and the specification problems we turn to next.

(3) Specifications and Enforcement

The butyl and cutting problems do not reveal the whole story of the six months following the government's authorization of production. The specifications continued to evolve and government inspection policies combined with lengthy delays in correcting or waiving specification problems continued to hamper production. Numerous specification and pattern problems remained unresolved including a lack of tolerances, seam location inadequacies, and conflicts within the specifications.

About one month into authorized production, the government conducted a thorough plant visit to review the "quality assurance status" of the chempro suit manufacturing process. PX-47. The trip report, written by Bruce Dansby, a quality assurance supervisor, indicated that problems with inadequacies in the specifications were hampering production. The specification problems identified included the following: the fact that the specifications were ambiguous in indicating when the butyl was to be sewn heavy-side or "face up," and the difficulty in determining after cutting a roll of butyl which side was the heavy side on each of the parts; two concerns relating to the clarity of the specifications for the pocket flaps; and at

least seven other specification inadequacies. PX-47. In particular, the government noted that it needed to "add tolerances," "clarify" the pocket stitching, "correct" the order of construction of the new velcro sleeve tabs, and "add" new defects to the table of defects. PX-59.

The pocket flap problem was not resolved until early 1988. The specification stated vaguely: "sew around the flap." Amertex reasonably interpreted this to mean sewing three sides while stitching the fourth side in the seam attaching the flap. The government issued a QDR in April for failing to sew the flap on all four sides. Subsequent problems relating to the flap included seam margin tolerances and whether the bartack had to be sewn all the way through to the trousers. There is no reasonable explanation for the years it took for the government to resolve these and other issues.

The trip report is significant for two other reasons. First, Dansby reported that he asked Hepner, the DPSC technical representative, about " 'Lessons Learned' from previous contracts [and] [s]he said that this was a newly revised specification [therefore] not too much from the past would pertain to this new procurement." PX-47 at 5. This position stands in sharp contrast to the government's litigating position that the revisions to the old specification were minor and no expanded First Article was necessary to test the adequacy of the specifications. The effect of this government stance was that past tolerances and understandings about deviations inherent to mass production of the suit would not apply. The past practice was to allow reasonable tolerances for manufacturing.

Second, the government's new position was that "if no tolerance is given in the specification, then the operation would

have to be 'exactly as specified' or it would be scored as a defect." PX-47. This is especially significant because 26 operations apparently had either no stitch tolerance or were written with a 1/64 of an inch tolerance. PX-284. Both parties' apparel experts basically agreed that such tolerances, or lack thereof, were unworkable for mass production.

The government repeatedly asserted at trial that there was not a "no tolerances" policy in effect, but we are convinced that there was, and it had the effect of slowing operators in their sewing operations because of the company's reasonable fear based on its actual early experience with this contract that every deviation would be scored and its final products would fail government inspection for minor defects. The First Article debacle certainly made such a concern quite rational. Many operations in the specifications had no tolerance given because past practice was to imply tolerances reasonable for mass production of the item. Even defendant's production expert acknowledged that a contractor must have tolerances in order to mass produce a garment. Tr. 5980-81. Amertex actually engaged in a higher level of inspection due to the policy. Nonetheless, it is impossible to produce millions of garments in an expedited and efficient manner in an atmosphere in which the government expressed its intent to score every single deviation with no tolerances implied.[41]

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41. The government repeatedly ignored the specification problems caused by a combination of specifications with missing tolerances and quality assurance personnel who refused to imply tolerances necessary for mass production. For example, there was a problem with the inspection of the cut parts relating to drill holes, which are the result of holding stacks of fabric hundreds of layers thick in order to cut and also mark notches. Tr. 914-15. The specification did not provide a tolerance for this item; therefore, Amertex requested that tolerances be established. (Cont'd)

Also in April 1986, a new modification was issued, P7, which included changes for the lining specifications and the sleeve tabs. That modification was bilateral and no delay or increase in costs would result from the changes. On May 1, the government issued another specification change, P9.[42] Two weeks later, the government circulated an internal request proposing additional specification and pattern changes. In response, Contracting Officer Steve McManus made the following comments: "*Two* proposed pattern changes. They are out of control. Maybe we should send it back, tell them we'll buy it when R & D [research and development] is completed." PX-54 at 1. That document was routed through the agency and other personnel commented: "Natick is having changes almost weekly. We should not make any more changes . . . . We need to stop this!" PX-54 at 1. Later that month, McManus' supervisor observed: "I have to agree with my guys. This many changes (plus the 15 pages already made on the Amertex contract) makes you wonder. Steve is right. We're into R&D." PX-54 at 2. These contemporaneous observations by participants in the process illustrate the fact that the chempro specifications had not been handled as ones for an expedited contract for millions of garments for which Amertex had bid. Despite the concerns of McManus and others, the stream of changes and problems with the specifications continued until shortly before termination of the contract.

(Cont'd)

DX-2540; DX-2442. Hepner responded summarily to this inquiry, stating: "[I]nstruct Amertex of the error of his ways. The use of tolerances where none are specified is not allowed." DX-2572 at 7. This response was not atypical during the administration of this contract and reveals the way in which the specifications were not being interpreted reasonably; that is, quality assurance personnel were not implying tolerances necessary for mass production.

42. Modification P8 was never issued.

In June, Amertex noted that it had to "stop production pending clarification from DPSC." PX-62. More than two weeks had elapsed since the contractor had requested clarification of one of the sleeve tab problems. The sleeve tab as initially written had no tolerances and, as DPSC reported in April, there was a conflict between the specifications and the patterns such that the new operation could not be performed as specified.[43] Amertex requested that the operation be modified and offered a solution to the specification deficiency in June. Amertex's subcontractor could not perform the operation as specified and the government quality representatives on site would not allow an alternate operation without authorization. Such a problem with a single operation could stop work on succeeding operations, having a compounding and reverberating effect throughout the plants.[44]

On July 23, the government issued modification P11 containing specification changes for the sleeve tabs as well as changes relating to zippers and straps.[45] On the same day, the government issued modification P12 which finally and officially adjusted the specifications for the ball-burst test and weight requirements of the linings.

In August, Amertex's concerns about the lack of tolerances

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43. The operations as written required the operator to sew through a "bump" of at least 10 layers of material.

44. PX-284 (noting also that at certain points in the chempro manufacturing process there were over 2,100 operators at eleven different locations).

45. P11 included a clause that "savings" would be finalized by the ACO. Six months later, in amendment A4, the government unilaterally charged Amertex $13,367 for those changes. Modification P11 did not solve all of the problems relating to the sleeve tab specifications.

and inadequacies of the specifications causing rejection were realized. On August 15, 1986, Amertex's first lot of completed garments from its subcontractor Apparel Arts was rejected for stains on the butyl protective pieces caused by the quarpel treated thread required by the contract. PX-69. The butyl reinforcement patches were not visible from the outside of the garment because they were inside the outer shell at stress points. The production lot was rejected even though it was clear from visual testing by the on-site government quality assurance representative that the stains were caused by the lubricated thread. *Id.* Since the beginning of production, Amertex had attempted to remove all spots and stains using the approved soap and water method. Amertex noted this particular problem at least as early as July 1986 but could not remove the spots on the reinforcement patches with the stain removal method provided.

The QDR noted that the rejection would affect production schedules. *Id.* Apparel Arts subsequently laid off employees. Two weeks after the QDR was issued, Hepner requested that engineers review the thread to determine if it was indeed the cause and if it had been manufactured to specification requirements. PX-74. She then inquired whether the stains were still a "scorable defect" even if the cause was conforming thread. PX-74. On September 15, the government issued another QDR rejecting the production for 71 minor defects, including 64 thread stain "defects" and one other stain that turned out to be caused by the charcoal lining. PX-72. *See infra.* At the end of September, the engineers responded that the required thread caused the stains therefore the resulting marks could not be scored. PX-74. Despite this response, Amertex's second production lot, in October, would also be rejected primarily due to thread stains.[46]

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46. As discussed below in text, 40 of the 55 defects scored were thread stains and 11 of the 55 were for the presence of slubs. PX-77. (Cont'd)

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Official resolution of the thread stain issue took two meetings at DPSC, three letters from Amertex, three QDRs, and nearly four months.

c) Assigning Responsibility for Delay

Delay during this six-month period was caused by the separate and independent actions of the parties, and liability may be apportioned accordingly. *Tyger Constr. Co., Inc. v. United States,* 31 Fed.Cl. 177, 259 (1994); *see Commerce Int'l Co. United States,* 167 Ct.Cl. 529, 338 F.2d 81 (1964); *William F. Klingensmith, Inc. v. United States,* 731 F.2d 805 (Fed.Cir. 1984); *see also Dawco Constr., Inc. v. United States,* 930 F.2d 872 (Fed. Cir. 1991) (allowing apportionment when there is clear proof of injury). We find that more than half of the 155 delay days in this period was caused either solely by Amertex or concurrently by both parties. The totality of the evidence at trial persuades us that defendant was solely responsible for about 45% of the delay and disruption in this period above and beyond the amount we consider to be either concurrently caused by both parties or solely caused by Amertex. Therefore, we find defendant solely responsible for unreasonable delays totalling 70 days during the period between February 25, 1986 and August 31, 1986.

2) September 1986 to February 1987

From September 1, 1986 through February 28, 1987, 181 days elapsed. During this second six-month period of Year Two, Amertex made slow progress toward completion of the chempro

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(Cont'd)

This illustrates how the government utterly failed promptly to correct even the most obvious of specification inadequacies and as a consequence disrupted production progress.

suit procurement. The original contract had provided for final delivery by the end of December 1986. The delivery rate schedule imposed by modification P3 remained unchanged and set final delivery of 2.4 million chempro suits at March 28, 1987. Amertex's actual production level was not close to the contractual plan and was far below the level desired by both parties.

By the start of this second six-month period of performance, Amertex had experienced 299 delay days including the 90-day adjustment in P3 (154 in Year One plus 155 in the first half of Year Two). That rate of delay continued during the period between September and February. Based on our review of the expert testimony as well as the actual production records, we are convinced that there were an additional 149 delay days in the latter half of Year Two. As in the first half of the year, Amertex made only about a month's worth (32 days) of progress toward completion during this second six-month period.[47]

a) Actual Production Levels

To illustrate the discussion of the delay in this period, we tabulate the cumulative production at the outset and end of the second half of Year Two in the following table:

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47. The production records enabled us to determine the number of delay days/progress days by month: September, 25/5; October, 27/4; November, 27/3; December, 26/5; January, 24/7; February, 20/8. For clarification, a "progress days" correlates with the amount of production that Amertex originally planned to take one day to accomplish.

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Table 2: Cumulative Levels of Production
Second Half of Year Two

Catecory	8/31/86	2/28/87
Cut Butyl (Sets)	265,602	573,848
Cut Nyco (Coats)	327,378	527,462
Cut Nyco (Pants)	327,378	527,462
Cut Lining (Sets)	328,562	333,842
Sew Outer shells A (Coats)	121,863	344,702
Sew Outer shells A (Pants)	115,328	310,312
Sew Linings (Sets)	48,144	200,358
Sew Linings & Shells B (Coats)	408	110,667
Sew Linings & Shells B (Pants)	18,744	112,754
Interim Packing	0	17,208
Final Packing & Testing	0	516
Delivery	0	0

This table shows the way in which production advanced once the cutting operations were transferred to Puerto Rico. Butyl availability was no longer an issue in this period, but cutting and specification problems continued to delay performance.

Ultimately, it matters little whether the decision to relocate cutting operations to Puerto Rico was due to Gentex's bad cutting or Amertex's benevolent desire for increased efficiency or some combination. The effect is the same: Amertex's build-up was delayed as the company transferred cutting production to a new site, the Wallart plant.[48] Cutting levels in all four categories did not reach the rate contemplated in Amertex's production plan

48. In modification P15, issued on October 29, 1986, the government officially approved the relocation of the nyco and butyl cutting, but the relocation was virtually complete by the beginning of September.

nor the rate necessary to fulfill the requirements of the contractual delivery schedule.

The government's sudden approval of nearly half a million units worth of butyl in September 1986 resulted in dramatically higher levels of butyl cutting than were possible in the first six months. Amertex was not able to utilize all of the material immediately, nor would it have been able to absorb such a large quantity at its planned peak level of production.[49] Amertex cut 68,544 units in September and 72,248 in October. By the end of October, the cumulative butyl cut surpassed the cumulative nyco cut. In November and December, butyl cutting slowed but the slowing was not due to testing delays at Aberdeen which were ongoing: an ample supply of approved material was available.

No additional butyl was approved between November 1986 and March 1987 but butyl cutting was not controlling the pace of the project during this period. Even though the butyl materials had been produced to specifications, some of the butyl coating on the base fabric was irregular and there was excessive selvage in some rolls. DX-2650; DX-2660 (80,000 cut pieces with uncoated area on edge); DX-2675. In January 1987, Amertex cut 70,272 units of butyl, but cut only 42,654 units worth in February. As shown in the table, by the end of Year Two, Amertex had made a cumulative cut of 573,848 units of butyl.

Nyco cutting during this period was slow compared with butyl cutting. In this way, low levels of nyco cutting probably limited the possible output of butyl, which is the converse of the situation in the first half of the year. In September, Amertex

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49. As noted earlier, Amertex planned for a peak production level of 200,000 units in each category per month. That level was never reached during the life of the contract.

cut about 36,672 units of coats and pants each; this was about the same rate as in August, when the transfer of cutting operations was started.

In October, the government issued two modifications to the contract relating to nyco: P14, issued October 7, was a waiver by which the government accepted some fabric that had exceeded the weight requirement, and P15, issued October 29, officially authorized the cutting relocation for nyco and butyl. Nyco cutting declined to 6,912 units each in October and then began a steady rise until 48,384 units each were cut in February 1987. The differential between nyco and butyl cutting was reversed between the start of the period and the end: cumulative nyco cutting was ahead of butyl by about 60,000 units in September and was behind butyl by about 50,000 units at the end of February. Amertex ended Year Two with a cumulative nyco cut for coats and pants at 527,462 each.

Between September and February, only 5,280 units of lining were cut by Amertex. During most of this period, plaintiff awaited government approval of the transfer of lining cutting to Amertex. Transfer approval was stalled until the end of January. DX-2669. In September, the government also issued a QDR regarding mends to the lining resulting from an ambiguity in the lining specifications. *See infra.* That QDR and the months it took to clarify the issue reverberated into sluggish levels of lining sewing.

Lining cutting was not controlling the pace of production during this period because sewing problems resulted in availability of more materials than could be sewn. Although lining cutting was not controlling, the shortage in cut linings resulted in delay in later periods of the project. Also as a result of the reduced level of lining cutting at Amertex, the Gentex

lining cuts with size and pinhole problems[50] were virtually the only stock for lining sewing until May 1987.

Outer shell sewing also proceeded at an unsteady rate during the September to February period. The sewing specification problems relating to tolerances and stains continued to undermine production progress. New specification problems arose through unreasonable interpretations of the specifications. Additionally, some of the poor Gentex cutwork remained in the production line and caused problems in the sewing of small items like pockets.

These problems negatively affected part-A production to the extent that coat and trouser shells were on the critical path for this entire period. Amertex's subcontractors completed 49,824 units of part-A coats in September, then production dropped in October and November, then increased in December, dropped slightly in January, and reached the level of 59,504 units in February. The subcontractors experienced similar levels of production in part-A trousers, completing 25,896 trousers in September, about the same amount in October, slightly fewer units in November and December, but only 9,720 units in the entire month of January. In February, trouser part-A production surged to 90,884 units even though, on February 6, Amertex terminated one of its subcontractors over continuing disputes about delay and disruption. For similar reasons, Amertex entered arbitration with one of its other subcontractors, Apparel Arts, in January. Despite these difficulties, Amertex was able to nearly double sewing part-A output over the previous six month level.

Lining sewing was also below the planned production mark.

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50. The presence of pinholes was not listed in the table of defects, but Amertex was wary of any potential problem that could be construed as a deviation and cause rejection.

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As noted, the government had issued a QDR that narrowly interpreted the specification relating to mends of lining material. The mend specification problem slowed lining sewing operations because Amertex was concerned that a heightened production rate would inevitably result in the increased mends which would in turn cause government rejection of the garments under the new strict interpretation. Lining operators were also working with Gentex lining cuts.

In September, Amertex sewed 19,584 linings, then finished about 25% fewer units in October, then increased lining output for the next three months to 38,400 in January, but concluded the year by sewing 25,152 linings in February. The production plan had called for lining sewing to run about 60,000 units behind outer shell sewing but Amertex ended Year Two with lining sewing behind part-A sewing by approximately twice that amount.

Amertex also completed about 100,000 part-B coats and pants during this six-month period. The joining of coat outer shells and linings grew steadily each month from 408 units to 110,667 units at the end of the February. Part-B pant sewing remained around 12,000 units in September and October, decreased by 25% in November, and then increased for the next three months until it reached the 30,312 level by the end of February.

By the end of the period, part-B coats and pants were basically in parity. At the close of Year Two, Amertex had finished manufacturing about 110,000 chempro suits, a far cry from the nearly 2.4 million that were due according to the contract delivery schedule in effect. The cumulative quantity of completed suits was one-half of the amount needed to fulfill the first monthly shipment requirement.

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Amertex began the second half of Year Two with no chempro suits in the packing stage and it finished Year Two with 17,208 garments interim packed and sent to Gentex for final packing, testing, and delivery. In February, Gentex completed final packing and sending for CCL_4 testing of 516 suits. However, by the end of the second full year of the contract, no chempro suits had been delivered to the government.

b) Assessing Responsibility for Delay

With respect to the second half of Year Two, each party contends that the other was entirely at fault for the delay in performance. Amertex contends that the category of production that was critical was sewing of the outer shells and that defendant caused all of the delays to that item. The government argues that it caused none of the delay, either solely or concurrently, and that Amertex's continuing cutting problems and their effect on sewing was the sole cause of delay. We conclude that both of these causes delayed performance, but not completely concurrently. We find that due in part to the specification problems, sewing was pacing production during this phase; additional cutting output would not have improved the slow rate of sewing.

The slow rate of cutting adversely affected completion of the project, manifesting itself more significantly at a later stage. The effect of the cutting problems, including the switch in cutting from Gentex to Wallart, cannot be understated. The cutting situation ultimately shifted primary responsibility for the delay in progress on this contract from the government during these first two years to Amertex in the last two. Before turning to that situation, we address the serious delay and disruption caused by the continuing problems with the specifications as well as the effect of poor cutting during the last half of Year Two.

Appendix C

(1) Specification Inadequacies

At the start of this period, the lack of tolerances for many operations as well as the government's insistence that operations without tolerances would have to be performed "exactly as specified" continued unabated. PX-47. Amertex persisted in its quest for reasonable tolerances for mass production. For example, Amertex wrote to DPSC on September 12, 1986 requesting a plus or minus 1/16 of an inch tolerance for all single needle seams because no tolerance was given in the specifications. PX-73. No change in the operations or table of defects was forthcoming.

As noted earlier, the absurdity of the specification and enforcement situation was revealed in mid-September when the government rejected, for a second time, Amertex's first lot of production.[51] The government rejected the entire lot of chemical warfare suits based primarily on stains to the reinforcement patches that were obviously caused by the treated thread required by the specifications. PX-72. According to the table of defects, Amertex was allowed an acceptable quality level, expressed in terms of defects per hundred suits based on a sample suit, of 2.5 major defects and 10.0 total (major and minor defects combined); the presence of one critical defect was cause for rejection. DX-2012 at 49. The September QDR rejected the production for the reasons listed in the following table:

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51. This lot had not been shipped to the government; it was being prepared for interim packing to be forwarded to Gentex for final packing and testing. As noted earlier, government representatives inspected incoming supplies and outgoing sewn goods for conformity with the specifications.

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Table 3: Thread Stains & Lot Rejection
September 1987 QDR

		Minor
A.	Coat:	
	(1) Raw edges up to 1/2 inch	1
	(2) Raw edges sleeve pockets	2
	(3) Stain	1
	(4) Eyelet not positioned as specified	1
	(5) Broken stitches up to 1/2 inch	2
	(6) Thread substance, stains	32
B.	Trousers:	
	(1) Thread substance, stains	32

PX-69. Sixty-four of the 75 reasons for rejecting the chemical warfare protective garments related to thread stains. The QDR noted that the rejection would affect the delivery schedule. PX-69. It also required Amertex to take action "to correct the weakness which allowed the deficient product to be presented to the government for acceptance," which was an impossibility because the condition was an inevitable result of the specification requirements. Amertex maintained that this rejection was paralyzing production. Tr. 1243-1244; DX-2518; DX-2521; PX-90.

Two weeks later, government engineers responded to the query submitted the previous month by Hepner regarding whether she could score the stains as defects even if they were caused by conforming to the thread requirement. PX-74. On September 26, the engineers said the thread stains could not be scored. *Id.* Yet, on October 13, Amertex's second production lot was rejected primarily for thread stains. PX-77. Amertex's third production lot was also rejected for thread stains and slubs. PX-91; PX-222.

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That QDR scored 40 minor defects for thread stains, 11 minor defects for slubs, one defect for a 1/4" deviation in backstitching a repair, and two minor deviations for a broken stitch. PX-77. There was also one major defect scored for a tear on the facing of a cargo pocket. DX-2582. It was unreasonable to score the thread stains as defects in light of the government's knowledge that the defects were caused by conforming to the requirements of the specifications. Moreover, the stub defects had been identified at least a year earlier as the result of an impossible-to-conform-with conflict within the specifications; but no change in the requirements had been issued since the problem first occurred.

From the time in July 1986 when the thread stain issue arose, Amertex informed the government repeatedly that rejection of the lot was seriously slowing production and packing.[52] Yet the government took months to correct an obvious error, further delaying the project and aggravating the production flow. The slub, thread stain, and lining mend issues were finally resolved on October 31, 1986.[53] Even in that resolution, the government maintained that it did not "waive" the stain issue. PX-91. Regardless of the terminology, the October 31 letter allowed the release of five production lots to the final packing and testing stage. *Id.*

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52. The problem of the interaction between the required thread and the butyl patches actually arose in June 1983, but the government failed to correct the problem until after the Amertex lots had been rejected three times. *See* PX-220.

53. The lining mend issue had adversely affected lining sewing as Amertex awaited clarification. The table of defects allowed two mends, up to 1-1/4 inches, in the "garment;" but inspectors had not allowed any mends to the lining cloth during production of the lining cloth. DX-2603 at 3. The October letter resolved the apparently ambiguous specifications which had been slowing lining sewing work. PX-80.

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In November, the government's administrative contracting officer for the Amertex chempro suit contract, Walter Quiroz, wrote to his superior (Commander Jones) describing the problems on the contract to date. He made the following statements regarding the delaying effect of the ongoing specification problems:

> Subject contract . . . has been overrun[ ], from its inception, by substantial defects which undermine[ ] and preclude[ ] contractor's possibility to perform and deliver as required by contractual terms.
>
> . . . .
>
> The [noted] sequences of ambiguities in specifications and repeated untimely responses by DPSC are contributing factors for contractor delays and lack of production.
>
> . . . .
>
> [The] delivery schedule is non-[existent] due to non-execution of modifications . . . which were intended to revise original delivery schedule but undermined by a series of ongoing changes precluding . . . a realistic [delivery] schedule.
>
> . . . .
>
> The above-mentioned disclosures reveal[ ] the level of difficulties and obstructions . . . . Contract performance and efficiency have

> been endangered by unclear specifications and DPSC's failure to provide timely responses. Unsatisfactory progress has been imposed by failure to interpret and resolve issues in a timely and responsible manner.

PX-82. As a consequence of the delay caused by the government, Quiroz contemporaneously recommended that a revised delivery schedule be executed "at no cost to the contractor." PX-82. This document accurately reveals the adverse impact to progress on the contract caused solely by the government.

On December 12, the government issued unilateral modification P16 which changed several operations, including the sleeve tab operation again, and procedures for the pockets, flaps, and bartacks.[54] P16's sleeve tab change inadvertently made the operation more time-consuming.[55]

The tolerance problems continued into January and February, 1987. In January, the government issued another modification to the contract but did not correct the missing or inadequate tolerances. In P17, the government changed additional specifications and operations regarding the labels, bartacks and testing of items. P17 did not correct the sleeve tab problem which, when finally clarified in March, resulted in Amertex having to redo all the sleeve tabs in stock. P17 also

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54. This unilateral modification also stated that any resulting change in price or delivery would be finalized by the ACO. No finalization ever occurred.

55. PX-89. P16 also contained a typographical error which purported to designate as a minor defect placement of the required bartacks on the fly protective piece "as specified." PX-86.

created another specification problem with respect to the bartacks.

Near the second year anniversary of the contract, the government was considering a new delivery schedule. In spite of Quiroz's assessment of the situation as well as his acknowledgment of partial responsibility for delays to date, the government sought consideration from Amertex in exchange for a new delivery schedule. One of the representatives involved made a memo noting that other personnel believed that "most of the delay was the government's" and therefore the extension should be at no cost. A new delivery schedule would not be imposed until April 1987. That schedule, A6, acquiesced in the delay to that point and gave a 501-day extension for contract performance. (The original contractual period was 672 days.)

The evidence convincingly establishes the government's separate responsibility for a significant part of the delay during the period from September 1986 through February 1987. The government's acts and contemporaneous statements attest to the delaying effect of the ongoing specification problems on production. However, because of the cutting problems discussed next, we conclude that the majority of the delay in this period was actually concurrent. We are persuaded nonetheless that the government was solely responsible for 52 delay days during this six-month period.

(2) Cutting Problems

As noted earlier, the relocation of cutting from Gentex in the mainland United States to Wallart in Puerto Rico had serious ramifications for production. The switch resulted in slow cutting of nyco and butyl as Amertex sought to build-up production levels at its new plant. Also, the transfer in cutting did not remove

all of the poor Gentex cuts from the production lines; rather, the Gentex cutting continued to hamper rapid production.

On October 2, 1986, Amertex wrote to its subcontractor Apparel Arts about the relocation of cutting, stating: "[W]e have started our cutting operations at Amertex [and] [t]he results indicate that our past inconveniences have been eliminated and that the supply chain to you will always be kept full." DX-2571. Shortly thereafter, Amertex wrote to Gentex about deducting extra handling costs due to some of the lining cut parts in the supply chain being "off pattern." DX-2578. The term "off-pattern" apparently referred to the fact that, due to material shrinkage inherent in processing, some small pieces were 1/8" short on all sides. DX-2592; DX-2658. Gentex considered this variance to be within the industry cutting tolerances and seam allowances. *Id.* In view of the government's no tolerances rule applied on this contract, Amertex was, however, extremely sensitive to the presence of any deviation.

This is not to say that there were no cutting problems of significance. Inter-company correspondence attests to the continuation of cutting problems ranging from poor cut parts to inadequate supply for building-up production. As Lajas noted on November 14, 1986, "cut work [is] being rejected at incoming inspection for selvage, shaded parts[,] . . . improper bundle rotation sequence, [and] parts that do not fit the pattern . . . ." DX-2608. Amertex also failed to fulfill its promises to subcontractors regarding delivery of new cut parts. *See, e.g., id.* The contractual relationship between Amertex and Lajas was breaking down in response to the numerous problems experienced from the inception of the contract.

In support of its position that Amertex cutting problems caused all of the delay in the period, the government points to

statements by Lajas, which was requesting payment for a half million dollar loss on the contract up to mid-November. In a letter complaining to Amertex, Lajas claimed that it "had not received any acceptable cut work since the program began." *Id.* This letter appears to have been drafted with an eye to litigation, but more significantly, Lajas had been able to sew the cutwork into about 200,000 trouser outer shells by that time, even though part-A trouser work trailed coat work by about 30,000 units. Still, there is no doubt that Amertex's slow cut work and poor cutting from Gentex adversely affected progress on the contract.

Apparel Arts also was dissatisfied with bad cutting and an inadequate supply delivery schedule. *See, e.g.*, DX-2627 (noting the presence of some cutting problems with the pockets). Eventually, both Apparel Arts and Lajas invoked arbitration proceedings to resolve their contractual disputes relating to delay and other matters. It is noteworthy, however, that almost all of the delay in the first year was the sole responsibility of the government and, even though the majority of the delay in the second year is categorized as concurrent, the government contributed significantly to the delay and disruption of the contract in Year Two.

Wallart's supervisors were also disgruntled with production levels. Sol Ludwig, company president, stated, as paraphrased by Gentex consultants, that "[t]he cut sets supplied by Gentex have been a nightmare [and] the inspection, screening, rework, and rehandling has caused productivity, financial, and morale havoc." DX-2678 (stating also that he was completely dissatisfied with the program up to that point). Ludwig testified that in making the statement he was being dramatic. Tr. 2163-64. Nonetheless, as a result of this cutting "nightmare," Wallart claimed in excess of $30,000 in increased costs exclusive of overhead expenses. DX-2678.

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As noted earlier, Amertex billed Gentex $75,000 for butyl cutting and also modified its delay claim for an equitable adjustment by $3 million in light of the negative effect of poor cutting on production. Tr. 8175 (Madera). Undoubtedly, the poor quality of some percentage of the cutwork had a significant delaying impact in this and later periods.

c) Delay Responsibility

We are not convinced that poor cutting was the only critical element in terms of delay, however. Nor does the evidence persuade that all of the delay was truly concurrent and unapportionable. The totality of the evidence persuades us, instead, that the continuing specification and unreasonable inspection problems delayed and disrupted the sewing work beyond the effect of cutting relocation and related problems. Although most of the delay in the second half of Year Two is noncompensable as either concurrent or attributable only to Amertex, a variety of government actions, and inactions, as explained above, caused unreasonable delays to the completion of the contracts and for this defendant must bear responsibility. We are persuaded that at least 52 of the delay days in this period were the sole responsibility of the government.

b. Delay Distribution for Year Two

For the reasons discussed in the preceding sections, we find that there were 304 delay days in Year Two. We also find that 122 (or about 40%) of those days are attributable to the sole responsibility of the government. The remainder are noncompensable. By the end of February 1987, 733 days had elapsed, 458 of which were delay days. As of the end of Year Two, 269 days of the total delay were the sole responsibility of the government.

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3. Year Three

When the parties entered the expedited contract for 2.4 million chempro suits at the end of February 1985, neither conceived that, due to numerous problems, not a single suit would have been delivered within the two years following award. Yet, after two years of intermittent delay and disruption, Amertex started Year Three having completed the manufacture of less than one percent of the contractual quantity, and none of those nearly 17,000 suits had been accepted for final delivery by the government.

In the third year of the contract, Amertex's production rate improved substantially over the previous year. However, the dramatically increased amount of output still did not reach the production capacity planned at the outset of the contract. Inadequate specification requirements and unreasonable inspection policies continued to undermine production, and cut work supply problems persisted.

Year Three encompasses the 366-day period between March 1, 1987 and February 29, 1988. Based on the evidence pertaining to this period, including the actual production reports, we conclude that there were 248 delay days during this period.[56]

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56. The following number of delay/progress days occurred by month: March, 26/5; April, 25/5; May, 23/8; June, 20/10; July, 19/12; August, 19/12; September, 16/14; October, 19/12; November, 19/11; December, 24/7; January, 23/8; February, 15/14. As noted earlier, these conceptual delay days are based on the amount of production output Amertex had planned at the outset as reasonably necessary to fulfill the original contract delivery schedule. That is to say, Amertex planned to achieve a production output of 50,000 units in each category per week, or an average of about 200,000 units each month. The shortfall from these output goals is expressed in terms of delay "days."

Thus, Amertex made 118 days of progress toward completion of the contract during Year Three.

Before detailing the production issues and allocation of responsibility for delay, we pause to examine financial issues which impact both the delay and termination claims. Amertex's cash-flow status continued to deteriorate as the contract extended into later periods than originally planned and the number of delay days continued to grow. The main financial issue in Year Three was the government's unreasonable delay in definitizing the equitable adjustment for P1 and P2 and the adverse effects of that delay.

At the end of Year Two, Amertex and government agents had reached an agreement, subject to approval by DPSC, for an equitable adjustment in the amount of $15,662,513 for the changes in P1 and P2. PX-109. The Federal Acquisition Regulations require contracting officers to definitize price adjustments for changes "in the shortest practicable time." 48 C.F.R. § 43.204. P1 had issued in May 1985, P2 in June 1985, and Amertex had submitted a cost estimate in October 1985. The "tentative" agreement was not reached until February 1987.

Meanwhile, Amertex and its subcontractors were anxiously awaiting funding of the adjustment. Apparel Arts' concern was typical of the suppliers and subcontractors: when Apparel Arts filed its arbitration claim against Amertex, one of its claims was that Amertex had failed to pay the adjustment it was due for increased costs associated with P1 and P2. PX-134. Some participants, like supplier Duro, started billing Amertex based on the increase per unit in price implied in the anticipated $15 million dollar adjustment. Tr. 2287. Amertex repeatedly requested finalization of the price and informed the government of the adverse effect of the situation:

> [T]he delay in definitization has become intolerable for Amertex and . . . threatens both performance on the contract and Amertex's very existence. Our subcontractors and suppliers have been performing to the changed specification. They (and we) are incurring the costs associated with those changes. Yet we are unable to bill the government for these increased costs because there has been no definitization of the price change. . . . This . . . has presented Amertex with cash flow problems since we are unable to recoup the money either by progress payment or final shipment until . . . finalized.

DX-2818.

Seven more months passed before defendant informed Amertex that the tentative agreement was not going to be funded. PX-144. Prior to that time, Amertex had repeatedly been told that the issue was "under review."[57] In September, Amertex was told to submit a new request.

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57. PX-130; PX-143. Unbeknownst to Amertex, defendant had been examining ways to terminate the contract. DX-2853.

Defendant was influenced by the investigation into whether Amertex's president, Leo Jacobson, had given an illegal gratuity to a DPSC officer in early 1985. In June 1987, defendant began debarment proceedings against Jacobson. He did not respond to the charges and attempted to invoke Fifth Amendment immunity because of a grand jury investigation of the suspected bribe. DX-2910. In October 1987, the Defense Logistics Agency debarred Jacobson based on the statements of

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Banco Popular then became seriously concerned about Amertex exhausting its credit line. Tr. 1652-53. As the bank threatened to apply the next progress payment toward extinguishing the credit line, Amertex petitioned a federal bankruptcy court for protection under Chapter 11 of the Federal Bankruptcy Code. Using that "leverage" to renegotiate with the bank, Amertex withdrew its petition a few days later. DX-2912; DX-2929. By that time, Amertex had received $63,629,110 in progress payments at the rate of 95% of incurred, approved costs.[58] In response to Amertex's bankruptcy filing, defendant did not issue a cure letter or suspend progress payments based on the company's financial health. The government reviewed plaintiff's financial situation and urged the release of progress

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a DPSC official who accepted a plea agreement in exchange for cooperation in naming individuals who allegedly paid improper gratuities. *Id.* Jacobson was never indicted. Nonetheless, he was debarred until June 1990. Defendant has not raised the issue as a basis for upholding the 1989 default termination.

In August 1987, defendant noted that absent a guilty plea or conviction, the regulations "regrettably" did not allow it to void the contract. DX-2853. Defendant observed that it could not default terminate because plaintiff continued to make progress, notwithstanding the "desirability of terminating." *Id.* In September, defendant reopened the negotiations of P1 and P2.

58. As noted *supra*, Amertex had incurred $16 million in materials costs, plus research and development costs associated with the P1 and P2 changes, plus other start-up costs in Year One. Amertex received $5,244,018 in LLTI progress payments in 1985, $28,255,276 in progress payments in 1986, and $30,129,816 by the time it filed a bankruptcy petition in late 1987. By the end of November, Amertex had completed final delivery of 169,425 chempro suits and had about one million more in the production pipeline.

payment number twenty-seven in the amount of about $3.3 million. DX-2934. The government concluded:

> [T]he contractor has the capability to complete the contract but not at the delivery rate required by the current schedule and not without costs substantially exceeding the funded value of the contract. With continuation of the contractor's $5,000,000 credit line at Banco Popular and with reasonably timely settlement of claims in-house (or to be submitted) . . . sufficient cash and credit should be available to finance complete performance if progress payments are not interrupted.

DX-2934.

Some of the damage to the contractor had already been done as Amertex's relationships with its subcontractors deteriorated during Year Three over the continued delays and lack of funding.[59] Amertex would wait until September 1988 for the adjustment to be finalized at $12.9 million. PX-189. However, in January 1988, the government issued an amendment to the

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59. Amertex's credit was also harmed. As described *infra*, Amertex encountered problems securing a nyco supplier to supplement one of the suppliers who was leaving the program due to delays. Amertex's bankruptcy succeeded in winning some extra time with the bank but failed to raise the confidence of others in the apparel industry. In February 1988, one potential nyco supplier balked at supplying the needed material upon being informed of the withdrawn bankruptcy filing. DX-2960. Amertex's bank did attempt to assist in obtaining a new supplier. DX-2972.

contract, A8, which provisionally increased the contract price by $8.5 million for changes in P1 and P2.[60]

Defendant suggested several reasons why definitization of a price adjustment worth almost $13 million took three and a half years to finalize. Some of the reasons were valid but the lengthy time it took to issue the price adjustment cannot reasonably be called the "shortest practicable time," let alone a reasonable period. Instead, the government's sluggish approach to this and other issues reflected an apathy for the very real financial and time pressures intrinsic to this procurement, which was solicited as a small business set-aside for the expedited production of 2.4 million garments. The government's lack of prompt resolution of chempro suit problems, big and small, helped to undermine the successful completion of the contract. Amertex, however, also contributed to the delay and disruption of performance. As a consequence, Amertex's financial stress worsened in Year Three as the delays continued to accumulate despite great improvement over the preceding year.

We now turn to the delay and disruption caused by the parties in the third year of performance. This period is not easily divided into functionally distinct time periods in terms of delay causation. Instead, we will examine the causes of delay in Year Three by first describing the actual production during the entire year chronologically by category and then evaluating the apportionment of the main causes of delay. As in Year Two, most of the 258 delay days are noncompensable as either concurrent

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60. That unilateral provisional increase made it clear that there was no commitment for funding beyond that amount. In Year Four, the government would fail to take the increased contract price into consideration in calculating progress payment availability, the very point of the provisional adjustment. *See infra.* In August 1988, the government issued amendment A9 which corrected a mathematical error in A8.

or solely attributable to plaintiff. Some of the delay, however, was the sole responsibility of defendant.

a. Actual Production Levels

To clarify our discussion of the delay in this period, we tabulate the cumulative production at the outset and end of Year Three in the following table:

Table 4: Cumulative Levels of Production Year Three

Category	2/28/87	2/29/88
Cut Butyl (Sets)	573,848	1,524,476
Cut Nyco (Coats)	527,462	1,499,558
Cut Nyco (Pants)	527,462	1,499,558
Cut Lining (Sets)	333,842	982,418
Sew Outer shells A (Coats)	344,702	1,379,222
Sew Outer shells A (Pants)	310,312	1,365,547
Sew Linings (Sets)	200,358	889,686
Sew Linings & Shells B (Coats)	110,667	818,437
Sew Linings & Shells B (Pants)	112,754	822,904
Interim Packing	17,208	611,244
Final Packing & Testing	516	316,234
Delivery	0	299,025

As this diagram demonstrates, Amertex's productive output improved tremendously during this twelve-month period. However, even at the peak levels reached, the contract was proceeding at a slower rate than originally contemplated.

Butyl cutting grew irregularly during the third year of the contract. Testing delays resulted in butyl being approved in only six of the twelve months in this period. Defendant's testing rate

remained low and from August 1987 until termination in January 1989, the government approved butyl in only five of seventeen months, totalling less than 300,000 units worth of the reinforcement fabric. PX-297; *See* PX-124. Had Amertex cut butyl at the rate originally planned, the government testing probably would not have been able to keep pace. PX-142. Nonetheless, Amertex's uneven progress in butyl cutting in Year Three cannot be attributed to continued butyl testing delays at Aberdeen because Amertex had at least a quarter of a million units worth of butyl uncut during the entire year. Specifically, Amertex had a "backlog" of at least 251,012 excess units and at most 771,495 excess units available for cutting during the year.

Amertex cut 49,566 units of butyl in March, completed slightly less in April, almost doubled output in May, decreased slightly in June, almost doubled output to 128,220 units in July, and then averaged almost 100,000 for the following four months. In December, butyl output plunged to only 27,648 units before climbing to the 104,640 unit level by the end of February. In all, Amertex cut nearly a million units of butyl during Year Three. This high rate of production, however, did not meet the originally planned contractual level of about two million cuts within a single year.

Amertex achieved a virtual parity between butyl and nyco cutting during Year Three, resulting in a gap of only about 25,000 units between the two materials needed for outer shell kits. Nyco cutting for coats and trousers shadowed butyl cutting in almost every month. In fact, considering the problems Amertex experienced with narrow nyco fabric, it is probably more accurate to conclude that the production level of nyco actually set the parameter of production output for butyl cutting.[61] The

61. Defendant thoroughly documented the nyco cutting situation in (Cont'd)

backlog of nyco fabric for cutting averaged about 165,000 units, but the supply of available nyco for cutting began a decline in September 1987 that did not cease up through termination. In this way, like the declining availability of butyl, had Amertex achieved the nyco cutting output originally planned, there likely would not have been sufficient nyco to maintain maximum output for long.

Amertex started Year Three with a nyco cutting level of about 70,000 coats and trousers each in March, reached a peak output of 119,040 each in October, and ended the year at the 95,232 level of cuts of each in February. As with butyl, Amertex cut almost one million sets of nyco in Year Three, but this high output was less than the production originally planned.[62]

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testimony and exhibits. For example, the government showed that part of the reason Amertex was not able to cut all of the available nyco was due to the problem of narrow fabric width. *See, e.g.*, DX-2827. The government also pointed to evidence that the cloth had a higher defect rate (3.9%) than the industry average (.5%). DX-2738. By August, the defect rate had fallen, but an availability problem was developing. DX-2870.

In autumn 1987, the supplier of nyco, Duro, informed Amertex that in January 1988, it would only be able to finish half as much nyco as in the preceding years. *Id.*; *see, e.g.*, DX-2872. In September 1987, Amertex's cutting subcontractor, Wallart, threatened to shut down due to insufficient nyco supply. DX-2881. For its part, the supplier maintained that delays from the outset of the contact lead it to mitigate the resulting loss by taking up incremental business to cover its unused capacity. DX-2924; Tr. 3493-94. Nevertheless, by late November, the contract had been delayed by 641 days, at least 269 (147 + 122) of which have been charged to the sole responsibility of the government, even though defendant was responsible for more than that amount concurrently.

62. Amertex blamed part of the low nyco cutting on slow release of
(Cont'd)

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Lining cutting also did not reach the planned level during Year Three. Indeed, the level of lining cutting trailed nyco cutting in every month of Year Three. Amertex cut only 12,960 units in March and had a peak output of 88,704 units in February. Amertex started the year with 15% of the lining supply set aside for defects. DX-2690. Amertex also experienced problems relating to narrow fabric widths and some tearing of fabric rolls during shipment. DX-2901.

Lining cutting also moved slowly because the government did not finalize the lining mend clarification until June. Even though the lining mend issue was apparently resolved and lining cutting proceeded at an increased rate in the last six months of the period, no consistent build-up of lining occurred. During Year Three, Amertex doubled the cutting level over the previous year but cut only about 650,000 units during the twelve months.

In contrast, Amertex's sewing subcontractors were able to triple the output of part-A work over the preceding year, even though a variety of specification problems remained unresolved. *See infra.* Part-A coat sewing grew steadily until a slight drop

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the fabric due to the government's "unreasonable" insistence that the fabric comply with a "colorfastness" test. Apparently, some of the camouflage nyco fabric passed a shading requirement initially but was failing the shade testing after the laundering of a sample. PX-103. Amertex felt that enforcement of the requirement, which applied to all camouflage clothing goods, was unreasonable here because the garment was intended for short-term use in the event of a chemical attack and would not be laundered for reuse. However, the specification was neither erroneous nor ambiguous, and the government had the right to demand compliance. *Cf.* PX-107. Moreover, narrow fabric width was a much greater problem than colorfastness for this item and the resulting delay was not the government's fault. *See infra.*

in June, which was followed by another steady increase until another drop in November. For the last four months of Year Three, outer shell coat sewing averaged about 85,000 units per month. Coat sewing peaked at about 117,000 in October and ended at the 100,000 level in February.

Similarly, part-A pant sewing grew steadily for five months, dropped somewhat in August and September, hit a peak of 134,620 units in October, and then averaged about 84,000 units per month for the last four months of Year Three. The departure of Lajas from the program caused a slight drop in the sewing of outer shell trousers in March, but trouser sewing out paced coat sewing for several months. During Year Three, Amertex completed the sewing of more than one million Part-A coats and trousers.

Lining sewing proceeded at a much slower pace than part-A work, even though the sewing of linings more than tripled as compared with Year Two. As noted, the lining mend discrepancy was not officially resolved until June 1987. Unreasonable inspection issues relating to needle, or pin, holes in the lining also afflicted progress on this item. *See infra.*

Between March and June, Amertex averaged the sewing of less than 50,000 linings per month. Moreover, between July and February, the sewing of this item did not stabilize, rising and falling by 10,000 units month by month. Amertex had a peak output of almost 90,000 units in both September and November, but finished the year at the 60,000 unit level.

Perhaps the most significant aspect of the production of linings was the way in which progress seemed to "bottleneck" with this item; that is, the pace of part-B work, joining linings and outer shells, was limited by the amount of sewn lining

available. During the period, there were almost always at least 150,000 more units of sewn outer shells than linings to go with them for part-B work. Additionally, the apparent shortage of sewn linings was so serious that for a few months, as lining was cut it had to be fed immediately into the lining sewing operations. In this way, a trend began in which lining sewing appeared to set the pace for the remaining operations.

Amertex's subcontractors completed almost 100,000 more units of part-B coats and trousers than new sewn linings during the year. By the end of the year, there was only about a 70,000 unit supply line gap between sewn linings and part-B cumulative levels. The part-A operators produced an average of about 55,000 finished suits per month in the first nine months of Year Three. Production output hit about 70,000 units in December, dropped to around 55,000 in January, and then hit a peak level for the period of 82,176 finished coats and 93,900 finished trousers. By the end of Year Three, part-B work had surpassed the 800,000 mark cumulatively, and coat and trouser production was almost equal.

While 770,000 chempro suits were completed in Year Three, Amertex was able to finish the interim packing of almost 600,000 of the garments. In Amertex's original plan, interim packing operations were supposed to lag behind part-B work by about 60,000 units. The plan envisioned the packing of about 200,000 units per month, but Amertex averaged only about a quarter of that in Year Three. Interim packing productivity, however, appeared to be especially sensitive to the continuing inspection problems plaguing the contract.

For example, in March, interim packing dropped to only 3,192 after the government rejected Amertex's fourth production lot as the velcro sleeve tab tolerance issue from the First Article

situation reappeared. *See infra.* Amertex's packing rate grew to about 44,000 units in May, but inspection problems relating to spots on the garment arose again and remained unresolved. Amertex averaged about 40,000 units per month between May and August. In September, Amertex was able to pack 72,200 suits but another unreasonable inspection crisis made packing drop to only 10,500 units in October. Packing levels rose to 73,200 in December and then dropped again in January over yet another inspection issue. Once the pinhole and bartack ambiguities were clarified, Amertex was able to reach a peak packing level of 187,030 suits in the month of February.

Interim packing levels in turn set the pace of final packing and testing. The severe interruptions to the interim packing rate undercut any attempt to build-up the final packing assembly lines, causing a great deal of delay in delivery of finished goods. Because of the unpredictability of the interim packing operations, the subcontractor was able to complete the final packing of only about 300,000 units. Final packing averaged only about 26,000 units per month, and in two months, no items were cleared for both final packing and testing. Production hit a peak of about 69,000 units in September but fell far short of the parties' goals for the third year.

Similarly, the monthly level of deliveries to the government were well below the contractual levels. Amertex completed the first delivery of mass produced units in April 1987, the month after the contract was to be completed according to the only official delivery schedule, P3. Delivery averaged around 30,000 units from June through October, peaked at about 69,000 units in November, and fell sharply in December, only to reach about the 30,000 mark again in February 1988. Thus, by the end of the third year of the contract, Amertex had tendered slightly less than 300,000 suits on a contract for 2.4 million.

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b. Delay Responsibility

The Amertex chempro contract encountered substantial delay throughout Year Three. Amertex asserts that unreasonable government specification and inspection problems caused such delay to the sewing and packing operations that achieving maximum cutting output would not have improved the rate of delivery progress and that, instead, increased cutting would have only further aggravated the acute storage situation that had arisen.[63] However, the fact that cutting proceeded below the planned rate prolonged completion of the contract and was caused by fabric quality issues for which the government bears no responsibility.[64] Additionally, the shortage of linings for sewing operations had an adverse affect on progress. Nevertheless, to some extent, the continued specification and inspection problems caused delay separate and apart from, and beyond, that caused by Amertex.

Accordingly, we find that the government was solely responsible for some of the delay caused in this period, but we are persuaded that we must categorize most of the delay in Year Three as noncompensable as either concurrent or solely caused by Amertex. The delay effect of Amertex's cutting problems

63. As noted before, the charcoal lining material was particularly sensitive to degradation and damage and also had a limited shelf life. Tr. 898-99 (L. Jacobson); DX-2858. Additionally, Amertex had dozens of trailers filled with various units awaiting the next stage of production.

64. Also, to some extent there was an output differential between the two part-B subcontractors which is not attributable to problems caused by defendant. *See, e.g.*, DX-2802; DX-2855. However, at least some of the quality control issues at the subcontractor Bayco are directly attributable to specification deficiencies such as the problem of bartack placement created by P20. PX-151-155.

has been noted and was well-documented by the government. Accordingly, the only issue that remains for this period is the extent to which the government's slow resolution of key problems as well as inadequacies in the specifications caused delay beyond that caused by Amertex. We turn now to a chronological discussion of delay and disruption caused by the government in this period.

Numerous specification discrepancies remained unresolved from the preceding year. On this contract, intended as one for expedited production, it routinely took months to obtain official resolution of even simple specification ambiguities. Sometimes modifications intended to correct a problem only spawned additional errors and uncertainties. The government asserted alternatively that these ongoing problems actually caused no delay to the project or that Amertex did not prove causation. We reject both of these arguments. Not only would it have been practically impossible for the specification problems not to have delayed and disrupted the contract, but also, and more importantly, Amertex furnished convincing proof of the delay, slow downs, disruptions and work stoppages caused by the continuing specification inadequacies.

In March 1987, the sleeve "bump" issue remained unresolved. Amertex repeatedly informed defendant of the manufacturing problems relating to the redesigned sleeve tab, which required sewing through more than ten plies of material and increased the likelihood of the tab being slightly crooked.[65]

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65. In all, it took more than two years for defendant to create sleeve tab specifications that were workable in mass production. To recap, the velcro sleeve tabs were added to the contract specifications by P1 on May 9, 1985. They were modified in P4 on October 16, 1985, but in a way that made the sleeve into a "useless tube" if the operations were (Cont'd)

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When combined with the government's failure to clarify officially the table of defects as to when a crooked sleeve tab is a critical versus minor defect, the issue adversely impacted speed of performance. Amertex noted that it was performing the operation very slowly and cautiously as a result. PX-102. Amertex's fear of rejection based on this unreasonable problem was well-founded: the government had rejected Amertex's fourth lot of production over the issue. DX-2197; DX-2744. The defect issue was not corrected even informally until April 6, 1987. DX-2744. On June 19, 1987, in unilateral modification P20, defendant made that adjustment part of the contract.

In March, Amertex also prepared a report describing the several outstanding specification deficiencies that were delaying production. PX-103. The government "concurred," either partially or without reservation, in Amertex's complaints about the following specification problems:

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performed as written. (Amertex, however, never followed the illogical operation.)

The ambiguity in the table of defects relating to the sleeve tabs, combined with unreasonable inspection, lead to the rejection of the second set of First Articles in November 1985. The tube was corrected by letter in June 1986 but in such a way that the revised operation created a "bump" of fabric that made the operation extremely difficult to sew and do so with precision. That change was not made part of the contract until P16 in December 1986.

The new sleeve tab operation was clarified by letter in March 1987, and as a consequence Amertex had to redo the sleeve tabs of 100,000 completed suits because the change applied retroactively. PX-145 at 6 (noting that there were also more than 100,000 units in process that were affected). P22, officially making that correction, was not issued until July 1987. Additionally, the table of defects ambiguity was not corrected until June 1987 in modification P20.

> lack of seam allowances not covered by P16; lack of tolerances for positioning items such as hook and pile (velcro) fasteners; inconsistencies between the pattern and specifications for the fasteners; lack of tolerances for placement of butyl; problems with tolerances for the position of sleeve tabs; errors in atropine pocket specifications; problems regarding which pattern was official; and unworkable definition for lining mends.

See PX-103; PX-107. Accordingly, the agency involved recommended incorporating most of the changes requested.

Significantly, the government also contemporaneously concurred "with contractor's statement as to the problems he had encountered with clarification of specification requests, patterns, and results of tests." PX-107.

In April, another government report made the following summary of the problem:

> The chemical protective suit is a high visability procurement at all levels in [the Defense Logistics Agency]. Since this procurement began, numerous problems have surfaced concerning the specifications, patterns, and the actual manufacturing operations.

PX-112. The government also observed: "There are many places in the end item specification where no tolerances are given. This is impossible to adhere to in any kind of production conditions."

Id. Yet, by the end of April, the government had taken no action, and Amertex requested a high-level meeting to clarify the chempro suit specification once and for all. No such resolution was forthcoming. DX-2769.

The government managed to issue two modifications to the contract relating to other issues however. In modification P18, the government promptly approved the substitution of Dandie Manufacturing for Lajas for the sewing of trousers. In amendment A6, defendant unilaterally issued a new delivery schedule.[66] The amendment extended the schedule by 501 days from the schedule imposed in P3, setting a contract completion date of August 10, 1988.[67] Amertex had requested that the modification include an additional 60 days to recover from the Lajas departure from the program, but that amount was not included. PX-99. To the extent that the government was solely responsible for a portion of the delay to this point, it was also a partial cause of Lajas' departure. PX-145.

Importantly, amendment A6 acknowledged that "delay is caused in part by the government." Implicitly, that would refer to delay beyond the 90-days of delay granted in P3. Amertex refused to sign the original amendment because it contained language requiring the company to release the government of any financial liability for performance delays to date. PX-99. Amertex informed defendant as well that the performance delay

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66. Amendment A5, which was to definitive the equitable adjustment for expenses relating to modifications P1 and P2, was not issued until later.

67. The amount of delay embodied in the modification accounts for about the same amount of delay which had occurred through Year Three.

claims of Apparel Art and Lajas alone exceeded $3 million. *Id.* Amertex noted that it would not waive its right to compensation for the "Government caused delays attributable to, among other things, the changes to the data package, faulty and ambiguous specifications, [and] erroneous testing of butyl cloth . . . ." *Id.*

In May, Amertex complained that interim packing was proceeding behind schedule because lack of adequate cleaning procedures were delaying delivery. In essence, the problem was that the impregnated charcoal linings created much dust that settled on the garments during production and the government insisted on scoring defects for any marks on the suits; therefore, Amertex had to carefully clean the suits before packing to remove charcoal marks that were inherent to the garment. Additionally, no permissible cleaning method would remove the occasional sewing machine oil stains that marked the garments during production.

Furthermore, Amertex maintained that packing was also slowed due to problems with surveillance marks. This problem arose in May 1987 with respect to the surveillance marking of the bags being used to ship the chempro suits from Puerto Rico to the mainland for final packing. *See infra.* The contract did not explicitly require the use of additional "poly bags," for transport (beyond the vapor-proof barrier bag specified for each garment), but the government insisted not only on additional bags but also on surveillance marking for them.

In May, the government issued an additional modification to the contract but it did not address this issue. The new modification, P19, changed the name of the chempro suit specification from "F" to "G." (Amertex had originally bid on specification "D.")

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In June, the government made a report regarding the "deficient contract data package," recommending that numerous specification corrections be incorporated immediately and noting that none of the changes affected the appearance or serviceability of the garment. PX-121. Yet, other documents show how miscommunication between government agencies prolonged problems which were disrupting production. For example, several of the changes recommended to DPSC by representatives at the Defense Contract Service Management Area (DCASMA) were stricken by Natick because that agency thought that the changes had already been made. PX-128. Some of these changes had been recommended by Natick earlier but had been previously deleted by Hepner as unnecessary.[68] Thus, needed clarifications for mass production remained missing from the specifications.

However, June did bring official clarification (P20) of some items such as tolerances for the velcro sleeve tabs, but that modification contained errors relating to the placement of bartacks on the cargo pockets. P20 contained 14 changes to the specifications. However, the newly created problems would not be corrected for almost another year, i.e., until unilateral modification P33 was issued in May 1988.

In July 1987, the government issued two other modifications to the contract. Unilateral modification P21 embodied a waiver for certain lining materials, and P22 finally clarified the sleeve tab operation, alleviating the "bump" problem which had slowed sewing operations.

In August 1987, the government issued two more waivers: P23 relating to weight and shade requirements for a butyl lot

68. PX-52; PX-72. Later, the government rejected garments because they were not in conformity with the very specification requirement deleted. PX-167; *see infra.*

and P24 which waived shade and zipper issues that had held up about 500 end items. Defendant also clarified by letter an ambiguity created to one of the operations changed in P20.

In September 1987, defendant issued two more modifications: P25, correcting P10, and P27, changing one of the places of government source inspection.[69] Significantly, by the start of September, Amertex had completed almost 450,000 suits but had packed only about 200,000. Accordingly, Amertex had failed to meet the new incremental delivery schedule in A6. On September 11, 1987, the government issued a "Show Cause Letter" informing plaintiff that defendant was considering terminating the contract for default. PX-141. In that letter, defendant noted that Amertex had to respond in writing whether "failure to perform arose from causes beyond your control and without fault or negligence on your part." *Id.*

On October 1, 1987, Amertex responded by listing several reasons for the delay in deliveries, including the CCL_4 sampling issue,[70] butyl testing delays at Aberdeen, continuing inadequacies in the specifications, as well as the government's failure to promptly finalize the equitable adjustments for P1 and P2 and the corresponding "negative impact on performance." PX-145. For these and other reasons, Amertex argued that the schedule

69. P26, a bilateral modification relating to material shade requirements (and erroneously referring to specification "F"), was issued on October 21, 1987.

70. Amertex noted that the delivery increments were set at 201,335 units and that, as of the date of the show cause letter, Amertex had delivered 206,352 units to Gentex which had been accepted for compliance with all manufacturing requirements by the government inspectors in Puerto Rico. However, because samples for CCL_4 testing were not taken until the items arrived at Gentex, only 113,615 had been approved for shipping to the government. PX-145.

imposed by A6 was unreasonable. Defendant's letter of October 30, 1987, acknowledged only the butyl testing delays as the fault of the government, and noted that the government was "agreeable to an equitable adjustment of the contract schedule for those delays." PX-150.

In the meantime, another inspection crisis developed in which government inspectors sought to exercise warranty rights relating to some completed chempro suits because of the presence of needle holes in the charcoal lining.[71] According to the table of defects, however, for a hole to be classified as a defect it had to be at least 1/16th of an inch long. DX-2001; DX-2002. As Amertex noted, classifying needle or pin holes as defects would "[impede] the speed with which the operator could perform the sewing operation to such an extent that it would be practically impossible to mass produce any item[s] . . . ." PX-146. Production in all sewing areas involving the lining, as well as the interim packing operations, plummeted to the lowest level since the start of the period.

Amertex noted that the unresolved bartack, pinhole, and tolerance problems continued to slow packing in November and December. The bartack inadequacy created in June resulted in the issuance of a QDR in December 1987. PX-153. It took almost seven months, and much delay to packing and part-B sewing, to get the problem resolved, and on January 11, 1988 defendant circulated a letter which deleted the two words that had generated the problem.

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71. *See* PX-146. In October 1987, Amertex also received a QDR related to performance of the bartack operation imposed by P20. PX-149. However, in July, Amertex had requested correction of the bartack operation described in P20 because the operation was impossible as specified. PX-131. Amertex was correctly performing the operation as originally specified, before the error was made. *Id.*

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In February 1988, the needle hole problem was finally clarified. As the government informed inspectors:

> Sewing repair procedures are permitted in the Suit, Chemical Protective specification . . . [and inspectors] are instructed not to score a "needle hole" under the "hole" defect unless the hole is greater than 1/16 [of an] inch, for the laminated cloth. Needle holes are a by-product of [a] repair operation.

PX-157. Upon that clarification, Amertex was able to finish the interim packing of almost 200,000 finished chempro suits in February.

However, new specification problems surfaced to replace those recently solved.[72] For example, the government started scoring all butyl reinforcements that were not facing heavy-side "outward." PX-162. As noted above, this issue had been raised in early 1986 as a specification ambiguity and mass production problem, but no change to the contract had been made. *See* PX-47. In fact, in the official specifications, only one of the numerous butyl operations (that pertaining to the chest pocket) specified that the butyl must be attached with the heavy side facing out. Yet, on February 19, 1988, Hepner issued a QDR to Amertex for failure to have all of the reinforcement pieces in the suit facing heavy-side outward. DX-2983.

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72. The government also started scoring defects for butyl fabric warp. PX-159. As Amertex noted, the butyl protective pieces are hidden from view and coated with rubber; therefore, direction of the warp would have no effect on appearance or serviceability. PX-160. The engineers agreed with Amertex's assessment. PX-163. This requirement was deleted in bilateral modification P32 in May 1988. That modification provided that an adjustment was possible, but none occurred.

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A more serious deficiency also occurred in February 1988. Nine lots of Amertex chempro suits which had been approved as passing all specification requirements up to that point failed to pass the CCL_4 test due to stitch tension and needle holes. DX-2963. Yet, such items were not specified in the hundreds of items singled out in the table of defects, nor could they reasonably be considered defects because they were inherent to mass production. Thus, even when Amertex complied with all of the documentation requirements and the government meticulously enforced the specifications, following the "recipe" of the chempro suit design did not insure an acceptable end item.

On February 23, 1988, the eve of the third anniversary of the contract award, the government issued a revised delivery schedule, P29, extending the contract by 206 days. (Amertex had refused to sign modification P29 because of waiver language therein.) The unilateral modification noted that the basis of the extension was that the delay may have been excusable. Apparently, the government had calculated 180 days of excusable delay for butyl testing problems and Amertex disputed that figure as too low. DX-2961. Nevertheless, P29 set the completion date of the contract at March 4, 1989.

As of the date that the new schedule was issued, February 23, 1988, Amertex maintained that some defective specifications were still not corrected or clarified in recognition of the mass production nature of the procurement. We cover those issues in our discussion of Year Four.

c. Delay Distribution in Year Three

It would be simplistic to dismiss the delay in this period as concurrent and we do not do so. Amertex has provided compelling evidence of delay beyond that caused solely by the

contractor and even beyond what could be categorized as concurrent. We conclude that 60 of the 248 delay days in Year Three are the sole responsibility of the government. This assessment necessarily involves a subjective judgment based on the totality of the evidence, including that pertaining to the incessant delaying effect of the persistent specification inadequacies. Government actions and inactions resulted in unreasonable delay of a different quality, magnitude, and duration than that caused by plaintiff or the parties jointly. Thus, we have found that by the end of Year Three, a total of 706 delay days had occurred and 329 of them are the sole responsibility of the government.

4. Year Four

For the remainder of the contract, in terms of delay, Amertex was primarily the author of its own woes. Fabric supply problems caught up with the contractor in the final year of performance. That some of those problems were not due to any fault by the prime contractor makes no difference. The essential element of a delay claim is fault or responsibility of the government. As the following recitation of the facts leading up to default termination shows, the vast majority of the delay which occurred in Year Four was not the sole responsibility of the government.

The fourth year of contract performance involves the 312 days between March 1, 1988 and the date of default termination, January 6, 1989. Our review of the actual production reports as well as the expert testimony convinces us that there were 246 delay days during this ten-month period.[73] Thus, Amertex made

73. The following delay/progress days occurred by month: March, 17/14; April, 23/7; May, 23/8; June, 21/9; July, 25/6; August, 24/7; September, 25/5; October, 28/3; November, 27/3; December, 27/4; January, 6/0. Especially in the fourth year, attributing delay to a particular month involved subjective evaluation.

only 66 days of progress toward the completion of the contract in this period. Even though Amertex completed more delivery and packing operations in Year Four than in the preceding ones, plaintiff's productive output in most of the other areas was lower.

More so than in prior years, in Year Four plaintiff's financial situation affected its production. Amertex's cash flow situation grew worse as the year advanced. Indeed, the heightened pace in packing relative to other operations was due to a change in the parties' financial relationship. The financial problems directly impact the delay and termination claims.

Just prior to the start of Year Four, defendant authorized A8, a provisional increase to the contract in the amount of about $8.5 million for the changes in modifications P1 and P2. The main effect of the contract amendment was an increase in the amount of progress payments available; thus, Amertex was entitled to receive progress payments totalling up to 95% of about $105 million rather than up to the original $96 million amount of the contract.

By the start of Year Four, Amertex had received about $75 million in progress payments against delivery of 299,015 chempro suits on a contract for 2.4 million garments. Between March and May 1988, Amertex received an additional $10.4 million to cover incurred costs, for a total of $85 million in progress payments. Nevertheless, plaintiff continued to struggle financially, and its production was behind schedule.

In April 1988, the parties met at DPSC to discuss the status of the contract; in particular, subcontractor Gentex sought assurances both that the contract was not going to be terminated due to the debarment issue and that the forthcoming delay claim would be favorably considered. The contracting officer's

memorandum of that meeting noted that termination based on debarment was "unlikely" because of the level of progress payments that had been disbursed and the government's need for the suits. PX-175. The memorandum also acknowledged: "[W]e did indicate that a portion of the delays were recognized as excusable." *Id.* On the routing slip for the memorandum, an official of DPSC made the following comment: "This issue . . . is going to go public and we may look bad if we pay anything." Amertex did not officially submit its delay claim at that time despite its worsening financial condition.

Amertex made no secret of its financial woes, however. In May 1988, plaintiff advised the government that it had exhausted its credit line due to the continuing delays and that it had invested in a substantial inventory which it had not been able to convert into finished units. DX-3054. Therefore, Amertex requested an "unusual" progress payment of about $1.5 million to increase its cash flow.[74] Plaintiff advised the government of its liquidity problems as follows:

> Amertex'[s] monthly expenses amount to some $2.1 million. Thus, the combination of five percent of incurred costs that Amertex is forced to carry along with interest on its credit line together with its regular monthly expenditures (which are not reimbursed until the following progress payment), means that by the fourth week of the thirty day cycle

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74. An "unusual" progress payment request is differentiated from an "ordinary" one. In this case, Amertex was requesting an amount beyond reimbursement of 95% of its May expenditures to help bridge the gap in its day-to-day cash flow. Amertex had already negotiated an additional $1 million on its credit line and Banco Popular was allowing some overdrafts.

> between progress payments Amertex is essentially out of funds.

Id. The government denied the request for $1.5 million but approved plaintiff's ordinary progress payment request. DX-3074.

The government also asked plaintiff to provide a production plan for completion of the contract, along with cash flow information and estimated costs to complete. Amertex responded in part with a revised schedule of 70,000 units per month, including a few months at 1.5 times that quantity of deliveries. The government released an additional regular progress payment of about $2 million in June. By the beginning of July 1988, Amertex had received a total of $87.3 million in progress payments, had delivered 610,865 chempro suits, and was experiencing serious production difficulties in terms of both cash flow and the effects of the nyco shortage. By that time, it became increasingly apparent to everyone involved that the contract was in a "loss position."[75]

The effect of a contract being in a loss position is that

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75. Amertex asserts, and the record shows, that defendant had suspected, or even concluded, that the contract was in a loss position by at least December 1987. We nonetheless conclude that the government was within its rights to cease making progress payments after having realized for seven months that the contract was in a loss position.

That the government elected not to act on that fact immediately by refusing to honor progress payment requests after December 1987 does not help plaintiff. We would be loathe to punish defendant for trying to help the contractor by failing to invoke the right to stop funding instantly. Whether the agencies violated their own internal regulations regarding the availability of progress payments by not acting promptly is not relevant to plaintiff's delay claim.

requests for progress payments must be evaluated using a "loss ratio factor" to determine whether any amount of incurred costs may be paid. *See, e.g.*, 48 C.F.R. § 52.232-16, 48 C.F.R. § 32.5. The loss ratio (expressed as a percentage) is determined by dividing the contract price by the total cost to complete. In July 1988, defendant calculated a loss ratio of 97.3%, derived by dividing $114.3 million by $117.5 million. In this calculation, the government reached the contract price by assuming a P1 and P2 adjustment of $18 million ($96.3 million + $18 million = $114.3 million).[76] The government also estimated that the cost to complete had risen by more than $20 million since contract award. Thus, the government concluded that plaintiff was not entitled to a progress payment by using the following calculation:

Table 5: Loss Ratio Application

Total Costs Incurred per Progress Payment Request	$ 88.3M
Times: Loss Factor	x 97.3%
Subtotal	85.9M
Times: Progress Payment Rate	x 95.0%
Subtotal	81.6
Add: Progress Payments to Subcontractors	+ 4.7
Subtotal	86.3
Less: Total Progress Payments to Date	- 87.3
Total Balance Available for Payments	($ 1.0)

76. Amertex's original estimate for P1 and P2 was $11.2 in 1985. In 1986, plaintiff submitted a detailed claim for $15.6 million. In early 1987, Amertex revised that claim to $17.2 million. The parties had a contingent agreement (which was never consummated) for $15.6 million in February 1987.

Thereafter, in new negotiations, plaintiff requested $16.6 million. (Cont'd)

PX-180. As of July 1988, the amount of progress payments "unliquidated" by deliveries was $60 million: Amertex had completed delivery of only about $26 million worth of chempro suits (611,000 units at the provisionally modified per unit price of $43).

Instead of halting the funding of the contract because of the loss status, defendant sought a method to assist Amertex's cash flow while obtaining the chempro suits the government needed. The method devised was to pay Amertex $13.45 per suit delivered thereafter if plaintiff delivered at least 70,000 chempro suits per month, and 5% less than that rate per suit ($12.78) if the company failed to meet that target. On July 16, 1988, the parties signed bilateral modification P37 which set forth that agreement[77] and a new delivery schedule.[78] The P37

(Cont'd)

Defendant provisionally definitized the modifications at $8.5 million; Amertex then requested an additional $9 million. PX-178. For purposes of the loss calculation in July 1988, the government assumed a settlement in full of Amertex's most recent request. Ultimately, the changes were definitized at $12.9 million, three and a half years after the modifications were issued.

77. P37 explicitly based the modification in payment on the fact that Amertex was entitled to receive progress payments up to 95% of contract price and that plaintiff had received the maximum allowable progress payments. Yet, at that time the total contract price as provisionally modified was about $104.8 million, and 95% of that amount was $99.6 million. By the time of the modification, Amertex had received about $87 million, or $12 million less than the amount available for progress payments.

78. Before P37, there were six modifications to the contract during Year Four. Four of them, P30 (3/2/88), P33 (5/19/88), P34 (5/20/88), and

(Cont'd)

schedule set a final delivery date of February 28, 1990, which amounted to an extension of almost a year beyond the deadline in P29's delivery schedule. Signed more than 1200 days after award, the P37 deadline gave Amertex about 570 days from the signing date to complete performance, originally scheduled to take only 672 from start to finish.

The payments made under the new modification were called "DD250 payments" (DD250's) rather than "progress payments." Defendant also promised to release a progress payment that had been requested prior to P37 upon the signing of the modification. On August 5, 1988, the government paid Amertex the last regular progress payment, in the amount of $1,260,887. In all, plaintiff received $88,566,214 in progress payments during the life of the contract.

About a month later, the definitization of P1 and P2 was also finalized at a total adjustment of $12,936,633 (increasing A8 by $4.4 million). This unilateral modification, issued September 8, 1988, increased the contract price, but not the DD250 payment rate, to $45.23 per suit from the bid price of $39.88. Accordingly, the new contract price would have had a positive impact on loss ratio calculations if progress payments were still the funding method; but under the DD250 system, the finalization had little effect. It did, however, improve the contract's posture by reducing the level of unliquidated progress payments through the increased value of each suit already delivered.

(Cont'd)
P35 (6/6/88), made changes in the place of performance such as substitution of new subcontractors for ones departing the program. P31 (5/9/88) was a unilateral waiver of cloth weight for the lining, and P32 (5/6/88) involved specification changes relating to the warp of the butyl. Modification P36 was issued after P37.

Appendix C

Amertex received DD250s in August and September based on the quantity of chempro suits delivered to the government. In September 1988, for the first time, Amertex started experiencing large-scale lot failures which decreased the amount of cash that Amertex had planned to receive.[79] Also, Banco Popular was applying about 25% of each DD250 payment toward reducing plaintiff's debt. DX-3154. Partially in response to the continuing cash problems, the parties revised P37 in bilateral modification P41.[80] Issued in October 1988, P41 increased the price to $15.50 per suit delivered, less 5% per suit if defendant received less than 70,000 per month.

Amertex complained at trial that this plan did not really change its financial condition because "there was still no way Amertex could complete performance within then-existing funding" due to the estimated $14-18 million loss projected[81] on the contract. Pl's Resp. to Def's Post-Trial Br. at 112. However, in the absence of a valid, certified delay claim, the government had no obligation to provide funding beyond the contract amount, and was not permitted to provide additional

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79. Amertex had inquired, during the P37 negotiations, what would happen to the company's cash flow if there were end-item failures. At that time, the government noted that plaintiff was obliged to satisfy the specification requirements.

80. Seven modifications were issued between P37 and P41. Two (A9 and P36) made corrections to previous modifications, and two (P38 and P40) made changes in place of performance. Additionally, A5, discussed *supra*, definitized the price adjustment for P1 and P2. P39 increased the allowable fabric weight. Only one modification would be issued between P41 and the termination modification. In November, P42 corrected P40 in terms of place of performance for specific operations.

81. This amount of loss is based on a DPSC estimate from August 1988. PX-185.

"progress payments" when a contract was in a loss situation (unless headquarters directed payment to continue).

During the DD250 period (July 16, 1988 to January 6, 1989), Amertex shifted its focus to converting finished units into cash through packing and delivering goods. In this way, Amertex was able to "earn" $6,955,066 from DD250's by the time of termination, but the amount was not sufficient for Amertex to satisfy its regular monthly expenditures on this contract. Before the last DD250 payment and at least as of October 1988, Amertex determined that certifying its delay claim apparently was a solution to the financial crisis that had developed.

At a December 7, 1988 "summit meeting," Amertex submitted a certified delay claim in the amount of $33 million. Shortly thereafter, defendant issued a cure notice based on the premise that plaintiff's financial condition was endangering completion of the contract. DX-3215. That cure notice also requested that Amertex provide a plan for the company to continue the contract in terms of funding. *Id.* Amertex responded that it could not determine its outside funding needs without a decision on the value of its delay claim, but the company asserted its intent to complete. PX-205. Defendant then requested additional information in support of the delay claim to which plaintiff responded. DX-3228; DX-3233. Thereafter, the government rendered a provisional determination of the delay claim at $1.8 million for 356 days of delay due to butyl testing problems but concluded that this was an insufficient adjustment for Amertex to complete the contract. DX-3252. On January 6, 1989 in modification P43, the contracting officer terminated the contract for default. The termination and delay decisions are discussed more fully in Parts II.B. and II.C.

Next, we examine the contract production path and delay in Year Four, from March 1, 1988 through default termination.

Appendix C

a. Actual Production Levels

To assist in our explanation of delay in the contract's final year, we provide completed production figures as of the following events: the start of Year Four; the beginning of August; and the default termination:

Table 6: Cumulative Levels of Production Year Four

Category	2/29/88	7/31/88	1/06/89
Cut Butyl (Sets)	1,524,476	1,703,420	1,706,876
Cut Nyco (Coats)	1,499,558	1,705,382	1,707,686
Cut Nyco (Pants)	1,499,558	1,705,382	1,707,686
Cut Lining (Sets)	982,418	1,436,686	1,561,150
Sew part-A (Coats)	1,379,222	1,627,790	1,664,654
Sew part-A (Pants)	1,365,547	1,638,115	1,657,003
Sew Linings (Sets)	889,686	1,384,662	1,507,158
Sew part-B (Coats)	818,437	1,301,782	1,484,776
Sew part-B (Pants)	822,904	1,261,763	1,452,587
Interim Pack	611,244	1,019,020	1,382,367
Final Pack & Test	316,234	709,985	1,177,396
Delivery	299,025	610,875	1,017,500

As this table shows, Amertex's production levels in the bottom six categories grew at a faster rate than the levels in all categories related to outer shell work, including butyl and nyco cutting.

This table also reveals the way in which production almost ceased in the first six categories after July, as production efforts focused on packing and delivering. Once again, plaintiff's peak productive output in any category reached only between 50-60% of the originally planned production of 200,000 units per month. By the time of termination, Amertex had delivered less than

half of the quantity originally called for in the contract. However, Amertex was making progress toward the 70,000 unit per month level of delivery set forth in P41 and P37.

In March 1988, the cutting of butyl slipped to about 70,000 units, which represents a decline from February's 104,640 unit level, the peak monthly quantity of butyl cut during the entire contract. Amertex's butyl cutting plummeted to only about 3,500 units in August, the last month of butyl cutting for the contract. During Year Four, Amertex again complained about slow butyl testing times at Aberdeen. *See, e.g.,* DX-3079. The butyl lots submitted in late 1987 routinely took more than four months to be tested, much longer than the contractual testing period of thirty days. *Id.* Indeed, butyl was released from Aberdeen in only one month between May and December; in October, about 60,000 units were approved by the government. Yet, during the fourth year of the contract, Amertex had an average of more than 250,000 units worth of butyl available for cutting that was not utilized. By the time the contract was default terminated, Amertex had a backlog of 286,234 units. PX-295. Thus, the government's sporadic and tardy approvals of butyl cannot be the critical element delaying production during the last year. By the date of termination, Amertex had made a cumulative cut of about 71% of the butyl required by the contract.

Throughout the contract, Amertex emphasized the close relationship between butyl and nyco in the preparation of cut fabric kits for the outer shell of the chempro suit, and we are convinced that such a production relationship existed. In Year Four, nyco availability and cutting set the pace of butyl cutting, which is the converse of the situation during the first half of the second year of the contract. In 1988, Amertex advised the government that it was having trouble securing a nyco supplier and that this was hampering Amertex's ability to comply with

the delivery schedule in effect.[82] Regardless of the reversal of the situation, Amertex sought to emphasize the butyl testing delays as a way to excuse its delay, as evinced in the following passage:

> [E]ven if Gentex is able to accelerate its supply of [n]yco [t]will, we will be unable to produce finished units without a drastic improvement in [A]berdeen['s] reporting of test results. . . . [W]e consider this to be excusable delay.

DX-3079. It may be entirely reasonable to assume that the tardiness at Aberdeen would have impacted the completion of the contract in the absence of any problem with the nyco supply, but such conjecture is inappropriate for the allocation of delay responsibility in Year Four. The evidence shows that throughout the last year, there was a shortage of nyco and a relative abundance of butyl for cutting.

The rate of nyco cutting in Year Four was so dismal that

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82. DX-3079. Amertex blamed the departure of Duro on the problems caused by modifications P1 and P2. *Id* . Amertex also noted that "due to the delays" caused by the government, the price of nyco had increased from the bid price four years earlier by about $.60 per yard, or $720,000. *Id.*

As noted earlier, we believe that Duro's departure was due to the fact that Gentex had not secured Duro as the supplier for the entire contractual quantity of fabric, even though there is no doubt that Duro had been frustrated over the long uncompensated research and development costs it expended in trying to comply with the modified chempro suit specifications, as well as by the lengthy delays which required replacement business to mitigate damages. Tr. 3489-94 (Goldberg). In sum, the lack of nyco in 1988, and corresponding delay, cannot be attributed entirely to the government.

Amertex cut only about 180,000 units, less than the amount cut by the end of the month following production authorization. Only about 2,300 sets of the nyco were cut after July. By termination, Amertex had completed the cutting of 71% of the nyco coat and trouser sets called for in the contract initially.

In contrast to nyco and butyl levels, the production output in all operations involving lining grew during the year. However, lining production dipped at the start of Year Four, even though the needle hole crisis had been resolved the preceding month. Lining cutting rose from about a 55,000 unit level in March to about a 113,000 unit level in June. The monthly rate then declined each of the following months until less than 2,000 units were cut in October. Amertex performed no lining cutting after that.

During Year Four, Amertex cut more than a half million lining units, but this rate was still less than the rate originally planned, and was less than the output in the preceding year. Indeed, the total output of cut lining was still about 150,000 units less than that of the other cut fabrics. By the time of termination, Amertex had completed cutting about 65% of the lining material needed to fulfill the quantity for which the contract was awarded.

In 1988, lining cutting out paced outer shell sewing, but because of the needle hole inspection issue in the preceding year, the final cumulative production of part-A work was higher than the final figures for lining work. In March, outer shell sewing of coats and pants started at about the 104,000 and 83,000 levels, respectively, and declined substantially in each of the following months.

The insufficient cut nyco supply caused several shutdowns

in part-A operations.[83] Some of the tolerance problems relating to part-A continued unresolved, and the contractor had not been sent some patterns for small sizes; however, the lack of nyco was the pivotal issue for progress in this production area.[84] Additionally, the contractor's cash shortage apparently had an adverse impact on outer shell sewing which slowed dramatically in the months surrounding the making of the P37 modification in July. During the second five months of Year Four, Amertex completed only about 37,000 outer shell coats and approximately 19,000 outer shell trousers. By termination date, Amertex had completed about 69% of the outer shell quantity it had agreed to produce at award.

The production output of lining sewing was much stronger than that of outer shell sewing. This more rapid pace was possible because of the increased supply of cut lining in the fourth year of the contract. Indeed, Amertex was able to sew about 35,000 linings more than were newly cut in the fourth year.[85] By termination, there were only about 54,000 cut linings that had not been sewn.

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83. Amertex blamed a shutdown in June on the government's tardy testing time of nyco that month. However, the underlying shortage of nyco during the period cannot be attributed solely to the government.

84. Amertex noted that the butyl patch controversy took months to resolve. On May 6, 1988, the parties signed modification P33, which deleted the requirement relating to the directional line of the warp of the butyl. That modification provided that an adjustment was possible, but none occurred.

85. The bottleneck apparent in the preceding period had abated. Despite the increased output of lining sewing, at the end of the contract, there were still about 150,000 more units of completed outershells available than could be joined with linings.

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In March, after the government clarified the specifications regarding the allowability of needle holes, the lining sewing rate more than doubled the level of production in February. Amertex averaged more than 108,000 sewn linings per month for the first four months of this period. The rate of lining sewing declined during the July-to-September period in which the average level of sewn linings was about 60,500 units per month. After that, only a little more than a thousand units were sewn before termination. By January 6, 1989, Amertex had sewn more than one and a half million units of lining against the total contract requirement of more than 2.4 million.

The cumulative lining figure set the parameter of possible part-B work, involving the joining of the linings with the outer shells. The levels of part-B sewing roughly paralleled the rate of lining sewing in every month until October. From that month to the conclusion of the contract, part-B sewing proceeded at a reduced rate while lining sewing stagnated. Amertex again pointed to unresolved specification issues but we note that part-B work proceeded at practically the maximum level possible based on the availability of sewn linings. By termination, there was a backlog of only about 25,000 sewn linings available for part-B sewing operations.

In contrast, even with the reduced quantity of nyco for outer shells, there were always at least 200,000 more part-A units completed than part-B units. At the start of Year Four, the gap between finished outer shells and completed chempro suits was about 500,000 units. In this way, despite the reduced availability of nyco for the program, lining cutting and sewing set the pace for how quickly outer shells could be converted into finished suits.

Amertex manufactured about 440,000 completed chempro

suits in the first five months of Year Four and somewhat less than 200,000 suits in the last five months of the period. As of January 6, 1989, Amertex had completed about 60% of the chempro suits required by the original contract.

More than half of the total quantity of the garments "interim packed" during the contract were packed in the last year. As in the previous period, packing rates appeared to be especially sensitive to inspection issues. For example, in September 1988, when an inspection issue arose regarding the poly bags, an area of contractual ambiguity, interim packing levels dropped to under 10,000 units from the nearly 119,000 units in the previous month. PX-295.

Also, the cleaning problems inherent in the suit construction continued; the cleanliness specification was strictly enforced, and no alternative cleaning method was provided.[86] Yet, the presence of even a few charcoal marks could cause rejection and Amertex's processing of suits proceeded at a slower than planned pace as the company worked to avoid having lots rejected on the basis of such minor deviations. As noted before, a lot could be rejected if the government discovered more than ten minor defects, or more than 2.5 major defects, or a single critical defect. Thus, eleven charcoal marks could cause rejection.

The interim packing level was near 97,000 in March,

86. Defendant provided a compelling reason why no alternative cleaning method was available: the use of any harsher solvent could undermine the effectiveness of the chempro suits in protecting the wearer. However, it was not clear why the government repeatedly chose to reject these needed, life-saving garments based on visual deviations that were hidden, like the thread stains, and were inherent to the specifications, such as the thread stains and charcoal marks. Such enforcement of deviations caused by the specifications was unreasonable.

dropped to half that in April, and then increased to the 116,000 level in June. There was a slight drop in July and then packing grew to about the 118,000 unit level in September. The payment arrangement developed in July made cash flow contingent on deliveries, thus creating incentives for focusing on packing operations. In the first half of the period, Amertex completed interim packing of about 408,000 units; in the last five months, plaintiff finished about 363,000 units. Amertex could not have prepared many more suits for shipping to the mainland than it did during the period, because by the end of the term there were only about 70,000 more completed suits than there were interim packed ones. By termination, plaintiff had finished the interim packing of about 57% of the garments agreed to in the original contract.

As noted earlier, after Amertex finished the interim packing of the chempro suits, they were shipped to Gentex in Pennsylvania for CCL_4 testing and final packing for shipment to the government. More than two-thirds of the work done in the final pack and test category during the life of the contract occurred during the last year of performance. Yet, even this significant amount of packing was less than the quantity originally planned.

Final packing and testing was on the critical path during the entire ten months of the last year of the contract. Final packing and testing had the largest gap in output between the cumulative level achieved and the level possible, such that by the end of the contract there were still about 200,000 more units available for final packing than were final packed. Hence, greater output in other areas such as nyco cutting and outer shell sewing would most likely not have resulted in increased levels of final packing.

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A big packaging problem during this period resulted from a newly imposed government request that garments shipped by sea from Puerto Rico to Pennsylvania be placed in individual polyurethane bags, combined with a prohibition on removal of the "poly bags" before final placement in contract-required barrier bags.[87]

The specifications originally did not require the suits to be "double-bagged," that is packed in a poly bag in Puerto Rico for shipping to the mainland before placement in the foil barrier bag prescribed in the solicitation; the interim poly bags had been optional. The presence of the poly bags hampered packing the suits into barrier bags. After imposing the poly bag requirement because garments were shipped by sea to the mainland, the government refused to allow the chempro suits to be removed from the poly bags upon arrival at Gentex for placement in the barrier bags. *See* PX-13; PX-14; PX-15. Defendant initially refused to allow Gentex to open the poly bags to release trapped air that was causing barrier bags to burst.[88] Even without the poly bag problem, the extra-large and larger suits did not fit properly in the barrier bags required by the contract, causing them to rip and slowing operations. Defendant provided no relief from these specification deficiencies that were the biggest problem slowing the packing rate. This problem was not Amertex's fault and is attributable to insufficient specification

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87. Tr. 3358. Subcontractor Gentex encountered several other problems during the final packing stage which resulted in lower levels of packing than possible. For example, some of the items sent from Puerto Rico had insufficient surveillance identification and labels. There was also a backlog of chempro suits that had been sent in mixed or small lots, making packing more difficult.

88. The specifications were eventually changed in recognition of this problem. PX-212; *see* PX-317, PX-23.

requirements. Thus, although the output in other production levels contributed to the delay to project completion in this period, the packing problems caused by the government delayed the project beyond that caused by the other concurrent causes.

The level of final packing work that could be accomplished was dependent on the rate of interim packing completed in Puerto Rico. Final packing progress was also dependent on the goods passing final inspection and testing. For instance, after the needle hole defect was clarified and goods were released from Puerto Rico, Gentex was able to complete final packing and testing of more than 116,000 suits in March. The packing rate proceeded unevenly for the next three months. From July through September, final packing averaged about 76,000 per month. Starting in September, a significant number of lots began to fail chemical testing.[89] Despite these failures, Gentex completed about 90,000 suits in October and November, reaching a peak of approximately 118,000 garments in December. Indeed, Gentex packed almost half a million chempro

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89. The specific quantities that failed by month between September and November are as follows: 22,399, 41,190, and 92,604 (69,000 of which had failed because of loose thread tension). The government concluded that a manufacturing defect, loose-stitch tension, classified as a "minor" defect unless exceeding one inch, could result in end-item failures. Ultimately, defendant changed the specification and included a test for sufficiently tight thread tension. PX-214.

When lots failed, Amertex requested retesting. When re-testing was allowed, some of these lots passed the tests. DX-3158, DX-3432 at 385-96 and 428-42. Amertex would request that the twice failed lots be re-submitted again, but the government refused because they did not believe any additional re-testing would change the resulting failures. DX-3192. Immediately after termination, there were 100,648 units waiting to be packed, 147,661 units packed but not shipped, and 69,441 units on hold that had failed testing.

suits in the last half of Year Four. By termination, plaintiff had completed about half of the final packing and testing called for in the original contract.

Once lots passed carbon tetrachloride testing and were finally packed, they were delivered to various government depots around the country. Amertex's delivery level started at about 23,000 in March and grew to the 120,000 suit level in June. Delivery dipped to about 69,000 in July before increasing to about 121,000 in August. For the next four months, the delivery rate proceeded at an uneven pace, reaching almost 87,000 chempro suits in December. Amertex completed delivery of about 11,000 suits in January.

In all, plaintiff delivered almost three-quarter of a million chempro suits during the last year of contract performance. However, by the time of default termination almost four years after award, Amertex had delivered less than half of the goods it had agreed to deliver in the original contract.

b. Delay Responsibility and Distribution

For the reasons discussed above, the vast majority of the delays in Year Four are not the sole responsibility of the government. At best, the majority of the delay in this period is concurrent and much of the delay can in no reasonable way be attributed to defendant. The government does bear some separate responsibility, however, for the continued disruption and delay caused by the defects in the specifications and inspection issues described above.

The delay caused by the specification issues was beyond the amount of delay that is truly concurrent; however, the record supports segregating only approximately five percent of the delay

as solely government caused. Therefore, we find that of the 246 delay days in the last year of the contract, 232 are either concurrent or solely attributable to plaintiff and 14 are the sole responsibility of defendant. The government-caused delays to the program in Year Four did not suddenly stop on March 1, 1988; instead, they were mostly eclipsed during the year by problems which cannot be attributed to defendant as compensable delay.

Accordingly, we find that during the 1,411 days between award and termination, there were 952 delay days. Based on the testimony and exhibits we find that defendant is solely responsible for 343 delay days. The remainder of the delay on the contract (609 delay days) is not compensable because some of it was caused concurrently by both parties and other parts were solely caused by Amertex, acting either as prime contractor or by virtue of the acts of its subcontractors. Therefore, we conclude that 36% (343/952) of the delay during the life of the Amertex chempro contract is allocable to defendant alone.

II. Conclusions of Law

A. Cardinal Change

Plaintiff claims entitlement to damages based on the theory that the cumulative effect of the disruptions, numerous changes, and defective specifications constituted a "cardinal change" breaching the contract. PX-217.

The chempro suit contract included a "changes clause," providing that the government could make modifications "within the scope of the contract" at any time. 48 C.F.R. § 52.243-1(a) (1984). Thus, the government's contractual right to make changes to the specifications was not unlimited. The Court of

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Claims has deemed modifications beyond the scope of the contract to be "cardinal" changes. *See, e.g., Air-A-Plane Corp. v. United States,* 187 Ct.Cl. 269, 275, 408 F.2d 1030, 1032-33 (1969) (holding that whether a change is cardinal depends on the totality of the circumstances). The Federal Circuit recently reiterated what constitutes a cardinal change:

> It occurs when the government effects an alteration in the work so drastic that it effectively requires the contractor to perform duties materially different from those bargained for. By definition, then a cardinal change is so profound that it is not redressable under the contract, and renders the government in breach.

AT&T Communications, Inc. v. Wiltel, Inc., 1 F.3d 1201, 1205 (Fed.Cir. 1993) (quoting *Allied Materials & Equip. Co. v. United States,* 215 Ct.Cl. 406, 409, 569 F.2d 562, 563-64 (1978)). In that case, the court determined that the modifications did not exceed the scope of the contract, and therefore a new solicitation of bids was not necessary. *AT&T,* 1 F.3d at 1205 (noting the overlap between whether the modification exceeds the scope of the contract and "whether the modification is within the scope of the competition conducted to achieve the original contract").

In the case at bar, plaintiff asks the court to find that, cumulatively, the alterations to the contract and defects to the specifications were so fundamental that the contractor is entitled to breach damages.

The government issued 42 "P" modifications and eight "A" amendments to the contract encompassing a multitude of changes, some of which actually changed or corrected the

operations for the chempro suit and others of which merely approved of the change of subcontractors at plaintiff's request. There is no magic number of changes which marks the threshold for when a cardinal change occurred. As the Court of Claims stated, "[n]either the number of changes nor the characteristics of the work to be performed is of itself the determinative factor." *J.D. Hedin Constr. Co. v. United States*, 171 Ct.Cl. 70, 106, 347 F.2d 235, 257-58 (1965) (finding that the 33 changes therein did not constitute changes beyond the scope of the contract). Thus, the more than 100 changes to operations on the Amertex contract are just one factor in evaluating whether a cardinal change occurred.

Plaintiff argues that the proper approach is to examine "the entire undertaking of the contractor, rather than the product . . . ." *Edward R. Marden Corp. v. United States*, 194 Ct.Cl. 799, 809, 442 F.2d 364, 369 (1971). Defendant responds that the key question is whether the project the contractor ultimately performed was essentially the same as the one it contracted to perform. *Aragona Constr. Co., Inc. v. United States*, 165 Ct.Cl. 382, 390-91 (1964). Defendant argues, in essence, that plaintiff agreed to make a chempro suit, and the compulsory modifications to the contract did not transform that garment into something other than a chempro suit. Tr. 5995 (Marshall). There is no denying that the contract began and ended with substantially the same item, but that does not end the inquiry.

As both parties observed, the court must consider "the totality of the change and this requires recourse to its magnitude as well as its quality." *Saddler v. United States*, 152 Ct.Cl. 557, 561, 287 F.2d 411, 413 (1961). Plaintiff bases its cardinal change claim on several factual matters which have been detailed in Part I, including the government's failure to require an expanded First Article in connection with revised specification D of the

chempro suit, the lack of testing for mass production, the lack of implied tolerances, and the multitude of changes (in excess of 100) in P1 and P2, including the imposition of the hydrostatic test and the infra-red test.

Undoubtedly, the constant stream of changes and the unreasonably long time it regularly took for defendant to issue needed waivers and clarifications caused serious problems for Amertex and seriously hampered production of what was reasonably understood to be a mass production contract. Further, the lack of tolerances and unreasonable over-inspection on this contract are most troubling. Amertex was harmed by the unforeseeable defects and ambiguities in the specifications. Furthermore, plaintiff was damaged, in ways that are difficult to quantify, by the sudden change in the inspection system in which government inspectors enforced the table of defects literally with no consideration of the past practice of implying tolerances necessary for mass production. *See L. W. Foster Sportswear Co. v. United States,* 186 Ct.Cl. 499, 405 F.2d 1285 (1969); Tr. 180-81 (L. Jacobson). The unreasonableness of the repeated lot rejections based on the thread stains inherent to the specifications, for instance, are but one example of inspection gone awry. The unreasonable rejection of the second First Articles and the other unreasonable acts by the government which undermined this project hampered mass production and, arguably, fundamentally changed the nature of this contract.

Notwithstanding the evidence supporting plaintiff's plausible and potentially convincing cardinal change assertion, plaintiff's position on this issue is fatally undercut by the bilateral modifications made to the delivery schedule in 1988. In modification P37, executed in late July 1988, Amertex agreed to produce and deliver the chempro suit, as then modified, under an extended schedule. Bilateral modification P41 in October

1988 increased the amount of DD250 payments and referenced the schedule agreed to in P37. In essence, Amertex promised to produce the modified chempro suit, with all changes which had been made to July 1988 and given the numerous other government-caused difficulties, on a schedule contemplating half the pace as the original contract.

Because of plaintiff's agreement to produce the modified suits, we find no cardinal change. (However, this conclusion leaves plaintiff's delay and disruption claim intact.)

B. Delay and Disruption

On December 7, 1988, Amertex submitted to the contracting officer a certified claim for $33 million based on the delay and disruption to performance caused by the government. On January 7, 1989, the contracting officer made a provisional adjustment for $1.8 million for 356 delay days caused by butyl testing delays. Subsequently, Amertex submitted a certified and revised delay and disruption claim to the contracting officer in the amount of $45 million. PX-217. On May 15, 1992, the contracting officer withdrew the provisional decision and issued a final decision denying the claim in its entirety. DX-2095.

1. Entitlement

Plaintiff seeks an equitable adjustment based on the delay and disruption caused by the government during the performance of this contract. As the Court of Claims observed:

> Equitable adjustments . . . are simply corrective measures utilized to keep a contractor whole when the Government modifies a contract. . . . [T]he purpose

> underlying such adjustments is to safeguard the contractor against increased costs engendered by the modification . . . .

Bruce Constr. Corp. v. United States, 163 Ct.Cl. 97, 100, 324 F.2d 516, 518 (1963). To obtain an equitable adjustment in a delay claim, plaintiff must prove that defendant unreasonably delayed the completion of the contract and that plaintiff's costs were increased as a result.

This court has noted that delay caused by defective specifications "is *per se* unreasonable." *Avedon Corp. v. United States*, 15 Cl.Ct. 648, 652-53 (1988) (citing *Beauchamp Constr. Co., Inc. v. United States*, 14 Ct.Cl. 430, 438 (1988) (quoting *Chaney & James Constr. Co. v. United States*, 190 Ct.Cl. 699, 706-08, 421 F.2d 728, 732-33 (1970))). Additionally, the specifications to which Amertex had to comply in this contract were "design specifications," and accordingly implicitly warranted that if followed, "an acceptable result will be produced." *Stuyvesant Dredging Co. v. United States*, 834 F.2d 1576, 1582 (Fed.Cir. 1987); *Hol-Gar Mfg. Corp. v. United States*, 175 Ct.Cl. 518, 360 F.2d 634, 638 (1966). Defendant contends that some of the specifications were "performance" specifications because Amertex had some ability to order the sequence of operations. However, considering both the specifications as a whole and the way in which they were enforced, we are convinced that these were essentially design specifications. *See Blake Constr. Co. v. United States*, 987 F.2d 743, 746 (Fed.Cir.), *cert. denied*, __ U.S. __, 114 S.Ct. 438 (1993). Additionally, plaintiff has established the way in which the specifications were deficient and that enforcement was flawed.

Moreover, the specifications at issue here gave the

contractor the right to assume that the specifications were suitable for mass production. *Appeal of PRB Uniforms, Inc.*, 80-2 BCA 14,602, 71,995, ASBCA No. 21,504 (A.S.B.C.A., July 11, 1980) (finding that the use of a standard first article as opposed to an expanded one impliedly warrants the adequacy of the specification). We are convinced that the specifications at issue were design specifications for the accelerated mass production of millions of garments. However, the specifications as written and enforced were often inadequate for mass production, especially expedited manufacture.

As the Supreme Court observed, "if a contractor is bound to build according to plans and specifications prepared by the owner, the contractor will not be responsible for the consequences of defects in the plans and specifications." *United States v. Spearin*, 248 U.S. 132, 136 (1918). In the case at bar, there can be little doubt that the contractor was not permitted to deviate from the literal words of the specifications. Tr. 400-01 (L. Jacobson); PX-235. Moreover, the fact that the contractor was allowed to vary the sequence of some of the specifications does not transform them into "performance specifications."

Additionally, contrary to assertions by defendant, plaintiff had no obligation to test the validity of the specifications through its own pilot lot. *See Blount Bros. Constr. Co. v. United States*, 171 Ct.Cl. 478, 346 F.2d 962 (1965). Plaintiff proved numerous instances in which the specifications were flawed and of the way in which the specification and inspection problems slowed and disrupted production. The lack of stated tolerances did not alarm plaintiff because past practice, as well as the mass production process, indicated that reasonable sewing tolerances would be implied. *See L. W. Foster Sportswear Co.*, 186 Ct.Cl. 499, 405 F.2d at 1285. Defendant broke from that tradition on

this contract and in doing so proved either the defectiveness of the specifications or the unreasonableness of the inspections.

Furthermore, every government contract contains an implied obligation that neither party will do anything to prevent, hinder, or delay performance. *See Lewis-Nicholson, Inc. v. United States,* 213 Ct.Cl. 192, 550 F.2d 26, 32 (1977). Thus, when the government acts unreasonably, delaying performance and increasing costs, it breaches this implied warranty and may be held accountable. Defendant maintains that it could never act unreasonably in insisting on strict compliance with the specifications. *Maitland Bros. Co. v. United States,* 20 Cl.Ct. 53, 63-64 (1990). If there ever were a case to provide the exception to any such rule, the circumstances on this chempro contract would be the one. However, we need not reach that far. In light of the past practice of implying tolerances necessary for mass production, the unreasonableness of the inspector's insistence on strict compliance with specifications that gave insufficient tolerances for mass production is readily apparent in the scoring of defects for as little as 1/32 of an inch. *See La Crosse Garment Mfg. v. United States,* 193 Ct.Cl. 168, 179-80, 432 F.2d 1377, 1384 (1970).

In this case, defendant repeatedly failed to clarify and correct ambiguities in the specifications promptly and diligently. Additionally, defendant failed to maintain effective communication between the various government agencies involved so that needed changes could be made promptly and persuasively. Plaintiff bears no fault and should suffer no harm for such circumstances. Defendant also failed to get its testing facilities under control so that needed fabric would be evaluated promptly in order to enable plaintiff to plan for production. Additionally, due to the lack of testing of the specifications for their adequacy for mass production, plaintiff suffered

unanticipated and unreasonable delays in trying to perform this procurement. *See Appeal of Switlik Parachute Co., Inc.*, 73-1 BCA 9865 ASBCA No. 15,560 (A.S.B.C.A., Jan. 4, 1973) (describing delay entitlement in case involving fabric specification problems which disrupted performance).

We have already described in detail the bases for our determination that defendant is solely responsible for 36% of the delay and disruption on this contract. Defendant contributed to far more delay than that but plaintiff's cutting, management and supply problems made much of the remaining delay concurrent. However, we agree with the conclusion of plaintiff's delay analysis expert that there was not a single period during the life of the contract when production was free of problems caused by the government. Tr. 4017.

Totality of the evidence provides a reasonable basis for apportioning the delay between the parties. *See Tyger Constr. Co. v. United States*, 31 Fed.Cl. 177, 259 (1994). Such an apportionment justly requires that the government "retain[ ] its liability for issuing defective specifications," while allowing defendant to carry "only a share of the damage assessment because of plaintiff's contributory errors." *Dynalectron Corp. v. United States*, 207 Ct.Cl. 349, 367, 518 F.2d 594, 605 (1979). This approach vindicates the rule that "when the [g]overnment's delay . . . stems from its failure to do what it should under the particular contract, it will have to respond in damages for the resulting additional outlays . . . . " *Tyger Constr.*, 31 Fed.Cl. at 259.

With respect to the mass of evidence pertaining to the delay and disruptions that transpired in the four years of the Amertex chempro contract, scarcely a single issue was uncontested, and this opinion reflects our conclusion about the merits of all of

the significant conflicting evidence on these points. We are convinced that plaintiff proved that defendant was solely responsible for at least 36% of the delay separate and apart from Amertex's delay or delay caused by the parties concurrently.

Defendant, in its eagerness to fill an urgent need for chempro suits, undertook a procurement that had not been adequately developed or tested. When those specifications, and the new ones added by modification to the contract, were subjected to the rigid scrutiny of quality assurance personnel who refused to interpret the specification in light of its expedited mass production nature, unreasonable and unforeseeable delay and disruption ensued. This fixed-price contract became, in part, a research and development project. Indeed, the government relied upon the trial and error of the contractor's experience with specifications and patterns; thus, a benefit accrued to the government.

Furthermore, the parade of changes and the numerous errors contained therein disrupted the production process in a way that mandates an equitable adjustment. These disruptions unreasonably protracted performance and plaintiff was harmed as a result. Were it not for plaintiff's own difficulties, such as the poor cut work supply and other inefficiencies, defendant would be held responsible for a much greater amount of the delay.

In sum, plaintiff is entitled to an equitable adjustment for the delay and disruption allocable solely to defendant.

2. Damages

Plaintiff submitted a certified claim for delay and disruption damages totalling $45,006,223, calculated using the "modified

total cost" method. Modified total cost refers to a way of calculating damages when it is impossible to segregate the costs associated with each of the causes of delay. We have made significant adjustments to this claim to reflect both the caution with which courts approach this method for determining an equitable adjustment and the allocation of responsibility we have found in this case. We will first describe why this method of calculating damages is appropriate here and will then show the downward adjustments to plaintiff's base claim figures.

Modified total cost is distinguished from a "total cost" method because in the former instance the costs have been adjusted to reflect the degree to which the government is not responsible for the excess cost incurred on a contract. Unmodified total cost is a disfavored method of computing an equitable adjustment because it assumes that all of the expenses of the contractor in excess of the bid were caused by defendant's actions. The case at bar is not a "pure" total cost case.

Here, we do not assume (nor does plaintiff assert) that all of the costs in excess of the bid price were caused by the government's delay and disruption. Nor do we assume that plaintiff's actual costs are reasonable or that the bid was reasonably computed. We have held plaintiff to the burden of proving the propriety of including its costs.

The Court of Claims has held that the total cost method of calculating the equitable adjustment is acceptable under the following four conditions:

> (1) the nature of the particular losses make[s] it impossible or highly impractical to determine them with a reasonable degree of

> accuracy; (2) the [contractor's] bid or estimate was realistic; (3) its actual costs were reasonable; and (4) it was not responsible for the added expenses.

WRB Corp. v. United States, 183 Ct.Cl. 409, 426 (1968). The *modified* total cost method is used when a plaintiff is unable to satisfy literally the last three conditions of the total cost method. Under the modified total cost method, a court may adjust plaintiff's recovery to reflect the inability to meet one or more of the last three requirements. Thus, a court may modify a contractor's claim in one or more of the latter three categories, to the extent that the evidence warrants, "in order to prevent the government from obtaining a windfall from the plaintiff's inability to satisfy all the elements of the total cost method." *Youngdale and Sons Constr. Co. v. United States,* 27 Fed.Cl. 516, 541 (1993). *See Boyajian v. United States,* 191 Ct.Cl. 233, 423 F.2d 1231 (1970); *MacDougald Constr. Co. v. United States,* 122 Ct.Cl. 210 (1952) (allowing use of method due to reductions for costs incurred for reasons other than the government's actions).

Defendant acknowledges that the modified total cost approach is allowed when there are no other means of precisely computing damages. In a similar case involving defective specifications, the Court of Claims noted:

> [W]e have used this method under proper safeguards where there is no other alternative, since we recognized that the lack of certainty as to the amount of damages should not preclude recovery [in cases where] . . . the fact of government responsibility for damages was clearly established . . . .

J.D. Hedin, 347 F.2d at 247; *see Locke v. United States*, 151 Ct.Cl. 262, 267, 283 F.2d 521, 524 (1960). Similarly, we have found that defendant's unreasonable actions damaged plaintiff and that the government is solely responsible for a significant portion of compensable damages (and concurrently responsible for much of the delay beyond that).

Defendant insists that Amertex's modified total cost approach should be rejected because the company failed to design a special accounting system to track all of the various delays and disruptions to this contract. We note at the outset that the government audited and accepted Amertex's accounting system several times during the life of the contract, such as during the P1 and P2 negotiations and in evaluating entitlement to progress payments. Moreover, plaintiff offered persuasive testimony attesting to the impossibility of tracking the numerous and complex ways in which the various specification deficiencies, testing delays, and inspection problems delayed the project. *See, e.g.*, Tr. 1606 (Madera) (stating that Amertex tried to price the delay costs separately but it was impossible); Tr. 1885 (Caldwell) (establishing the practical impossibility of segregating and measuring the delay and disruption costs of the more than 100 changes to the operations and the rippling effect of the specification problems throughout the factories).

a.

In this case, the circumstances are akin to those in *J.D. Hedin*, in which the court allowed an equitable adjustment even though "[t]here is no precise formula by which these additional costs can be computed and segregated from those costs which plaintiff would have incurred if there had been no government-caused difficulties." *Id.* Indeed, plaintiff contends, and we find, that the nature of the disruption here makes it practically

impossible to segregate the costs for the government's delay and disruption. Thus, this case is similar to the circumstances described in another case of this court:

> [We agree with plaintiff's claim] that the right to an equitable adjustment arose almost from the beginning of the contract and continued and enlarged itself in almost every day of the contract operations . . . all due to the fault of the Government . . . . To attempt to segregate delay and lost time, set up and breakdown estimates, . . . and loss of efficiency as opposed to normal time would be a wasteful exercise . . . .

Delco Alec. Corp. v. United States, 17 Cl.Ct. 302, 328 (1989) (citing *Appeal of Robert McMullan & Sons, Inc.*, 76-2 BCA 12,072, ASBCA No. 19,129 (A.S.B.C.A., Aug. 10, 1976)), *aff'd*, 909 F.2d 1495 (Fed.Cir. 1990).

Defendant contends that because Amertex was able to segregate some costs, such as those related to P1 and P2 (other than the delay associated with those modifications), it should have been able to isolate those increased expenses related to government-caused delay. *See, e.g.*, Tr. 1496-97; Tr. 2599; Tr. 2721. However, we are persuaded that the ability to estimate some costs, for example the cost difference in the sewing labor time it takes for an operator to attach velcro as opposed to a snap, or the direct cost associated with fabric shortage, is very different from separating the costs of overlapping specification problems and inspection disruptions delaying the rate of achievement throughout the life of the procurement.

Appendix C

Moreover, this case is not a pure *Eichleay* situation with a discrete period of delay and easily calculable fixed costs and overhead; instead, the delay and disruption persisted throughout four years of work and involved increased overhead, extended labor costs, increased management, and additional indirect support personnel. Tr. 7641-42 (referring to *Appeal of Eichleay Corp.*, 60-2 BCA 2688, ASBCA No. 5183 (A.S.B.C.A., July 29, 1960), *aff'd* 61-1 BCA 2894, ASBCA No. 5183 (A.S.B.C.A., Dec. 27, 1960), which allowed an equitable adjustment based on computation of the amount of fixed home office overhead that would have been "absorbed" by the direct costs of work on the contract had there been no delay). We thus reject defendant's insistence that the company should have foreseen and been able to "capture" the precise increase in costs attributable to the numerous specification changes, errors, corrections and inspection issues which permeated nearly every aspect of operation on this contract. Amertex has shown the impossibility of capturing the delay and disruption costs caused by the government's numerous changes and corrections, as well as the way in which the manner of contract administration changed this straightforward manufacturing contract into one involving much experimentation and effort to work out the "bugs" for mass production of the new specifications.

b.

As for the next two components of modified total cost, in general, we considered Amertex's bid and actual costs to be sufficiently reasonable for use of the modified total cost method.

Under the modified total cost approach, plaintiff must prove that the bid was reasonable; to the extent that plaintiff falls short, the court may make adjustments. Amertex bid $39.88 per suit

on the 1984 solicitation of the chempro contract. This bid included materials, labor, overhead, general and administrative expenses, and profit. Significantly, the bid was within the range of other responsive, responsible bidders. PX-284. Defendant contends that *Youngdale & Sons Constr. Co. v. United States,* 27 Fed.Cl. 516, 542-43 (1993), is controlling, and suggests that the Amertex bid should be declared unreasonable because, as in that case, plaintiff's testimony about the bid was vague. However, unlike the bid in *Youngdale,* Amertex bid was within close range of other qualified bidders. Moreover, plaintiff presented convincing evidence of the bid's reasonablness, based in part on a comparison with the other bids. Tr. 3006-07.

Defendant has raised questions about virtually every single aspect of the bid, but we are persuaded that only a few of the criticisms warrant further discussion, to wit, the indirect related labor rate, the overhead, and the general and administrative rates.

Plaintiff's bid included an indirect labor rate of 31% of the direct labor expense. (Indirect labor, despite its designations, is a part of direct labor in Amertex's accounting system. "Direct labor" is basically sewing labor, and "indirect labor" includes factory management, materials handling, quality control inspection, and repairs and alterations, all in support of the actual sewing function. Tr. 1494.)

Simplified, to say that the indirect rate is 31% means that for every dollar spent on sewing a garment, Amertex estimated that an additional $.31 in handling and other essential support costs would be incurred. Plaintiff's cost expert, Price, opined that 31% was a reasonable bid rate, even though Amertex had obtained a 34% rate on its previous 1.1 million unit production of chempro suits in 1979. The basis for his opinion was that it is

reasonable for a contractor to expect the rate to decline as more suits are produced, so that at the outset of a production, the indirect rate would be "worse" than the optimal (bid) rate, and as production proceeded the indirect rate would be "better" than the optimal rate due to increased efficiency. Tr. 2994-2996; PX-284 at 78-80. According to Price, with a larger and more expedited procurement planned, greater efficiency per garment would be achieved and the expected average rate of indirect labor during such a production justified Amertex's lower bid rate.

Defendant, through the testimony of Robert Johnston of the Defense Contract Audit Agency (DCAA) and of Bud Marshall, provided a more reasonable alternative to this weakness in plaintiff's bid. We are convinced that Amertex should have made some adjustment because five years had passed between the two procurements and because the new contract specification required lining to be handled more frequently due to the fact that it was "sewn in" at an earlier stage in the new specification. Tr. 7486 (Weinsten). Defendant estimated, and we adopt, what we perceive to be a more reasonable indirect rate of 39%.[90] We have adjusted Amertex's modified total costs to reflect this rate.[91]

Concerning the bid overhead and general and administrative expense rates, we are further persuaded by defendant. Plaintiff's rationale for its lower than industry rate for overhead was not convincing; accordingly we have adjusted the overhead rate from 69.36% of total labor to 75%. Similarly, we adjusted the rate

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90. DX-3397. As adjusted in the DCAA report, Amertex's actual incurred indirect labor rate was 44.42%.

91. With the exception of the costs associated with the subcontractor Gibraltar, we have applied this rate across the board.

for general and administrative expenses to one applied to "total cost input" rather than one applied only to labor costs. Plaintiff used a bid rate of .5% of total costs as the basis for allocating general and administrative expenses to this contract. However, defendant's experts were persuasive that such a rate was extremely understated, especially because Amertex's actual incurred rate was at least 3.12%. Therefore, we accept defendant's alternative rate of 1.55% as a reasonable standard cost rate for this bid item and have adjusted accordingly.

Concerning the reasonableness of plaintiff's incurred costs, defendant disputed items too numerous to recite. However, we have found only a few areas in which we are not convinced of the reasonableness of plaintiff's incurred costs. Indeed, we find witnesses Caldwell and Price so convincing on these cost issues in general that we have adopted Caldwell's conceded, or compromise, adjustments to the rates for overhead incurred and general and administrative costs incurred.

We have made adjustments to the various subcontractor costs, and these are described in detail in several schedules appended to this opinion. Additionally, we deducted Amertex's claimed anticipatory profit from the modified total cost basis, because anticipatory profit is not recoverable in an action for delay and disruption damages.[92] However, we are persuaded that profit is allowable on an equitable adjustment such as this. The contract allows the price to be adjusted equitably under the "Changes Clause." 48 C.F.R § 52.243-1 (1984). The delay and disruption to the contract entailed extra work that was more difficult than originally anticipated by the contractor. We consider the standard profit rate of 10% to be a reasonable

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92. Apparently, the anticipatory profit figure had been included due to plaintiff's breach of contract, cardinal change, claim.

percentage of profit on the allowed costs. *Delco,* 17 Cl.Ct. at 334; *Appeal of Walker,* 78-1 BCA 13,005, ENG BCA No. 3744 (Eng. B.C.A., Dec. 15, 1977). Additional adjustments are detailed in the appendix to this opinion.

c.

With respect to the fourth prong of the total cost method — that all of the increased costs be the responsibility of the government — we award to plaintiff only that percentage of the adjusted total costs for which defendant is solely responsible.

Amertex's base equitable adjustment claim was $45,006,223.[93] Plaintiff's witnesses testified that this figure was a net or modified amount, because Amertex deducted $3,530,807 prior to submitting its claim for $45 million.[94] In arguing that neither Amertex's bid nor its remaining actual costs were reasonable, defendant questioned specific elements of Amertex's

93. At trial, Amertex as prime contractor identified $90,222,808 as its modified total costs incurred. Reducing that figure by plaintiff's asserted value of goods delivered ($42,647,263) and work-in-process ($30,246,065) leaves a net modified total prime contractor cost of $17,329,480. Amertex then added the subcontractor's cost-based claims of $19,225,812 and the arbitration settlements of $1,320,871 to reach the total claimed costs before profit of $37,876,163. To this figure, Amertex added profit on costs at 12%, anticipatory profit, and a cost-of-money adjustment to reach a base modified total cost claim of $45,006,223. A more detailed account of these calculations is provided in Schedule A of the appendix to this opinion.

94. This deduction for unclaimed costs included the following items: subcontractor rework charges ($146,421); narrow fabric ($1,249,290); repairs to charcoal lining ($146,190); damaged butyl ($112,700); and excess materials and cutting labor ($1,876,206). DX 3397 at 6, 68. These

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claim totalling $28,795,367. Thus, the portion of Amertex's claimed costs not questioned by defendant was $16,210,856.[95]

Based on the government's audit of plaintiff's claim, Amertex made concessions further reducing the claim by $701,660 along with a net increase of $23,002 in the subcontractor portion, to reach an adjusted claim of $44,327,565.[96]

We have found significant liability on the part of the government and conclude that modified total cost is the only method of proof available considering the nature and effect of the government's delay and disruption. Therefore, our inquiry focuses on determining the proper base figure for the apportionment of liability for damages.

In ascertaining the equitable adjustment to which plaintiff is entitled, we seek an amount which represents the increased costs to a reasonably efficient contractor based on the delay and disruption that occurred. Both parties have legitimate

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figures included direct material costs, some direct and indirect labor, and some overhead and general and administrative expenses allocated to the costs. Tr. 8175, 8192-99 (Madera).

Defendant questioned whether such a deduction was ever made by plaintiff, but we believe that this figure was in fact deducted from the total costs.

95. $45,006,223 less $28,795,367 equals $16,210,856.

96. See PX-339R. These concessions and adjustments are detailed in Schedule A of the appendix.

arguments about virtually every single category of cost incurred on this contract, but we consider the main dispute to concern the amount between plaintiff's adjusted claim of $44.3 million and defendant's unquestioned costs of $16.2 million which would be a reasonable base figure for the adjustment.

The specific deductions from plaintiff's claim found appropriate are set out in the appendix to this opinion. The bulk of the reductions are adjustments to the various indirect labor, overhead, and general and administrative expenses. As the appendix shows, we have made deductions totalling $16.3 million from plaintiff's adjusted modified total cost claim of $44.3 million.

Our adjustments leave a total for plaintiff's modified excess costs of $27,976,713 which we use to make an allocation of responsibility for delay and disruption. Plaintiff has established defendant's sole responsibility for 36% of the delay and disruption and, accordingly, plaintiff is entitled to an equitable adjustment of $10,071,617. However, due to the amount of unliquidated progress payments, plaintiff's $10 million adjustment becomes merely an offset to the amount of defendant's counterclaim discussed below.

C. Default Termination

In January 1989, the delay compensation and termination issues were inextricably bound. We next evaluate whether the default termination was justified considering plaintiff's entitlement to the equitable adjustment we have found.

On January 6, 1989, by contracting officer decision, defendant default terminated the Amertex chempro contract. DX-3255; DX-2002 (modification P43). The contracting officer's

valuation of plaintiff's delay and disruption claim at only $1.8 million was central to that decision, which based default termination in part on plaintiff's financial inability to continue the contract to completion. On May 13, 1991, plaintiff submitted a certified termination for convenience claim in the amount of $34 million. PX-216. The contracting officer did not issue a final decision on that claim within the 60 days mandated by the CDA; therefore, the claim was deemed denied. In the interim, the contracting officer withdrew the provisional award of $1.8 million for delay damages. In this litigation, plaintiff seeks to convert the default termination to one for the convenience of the government.

Default termination "is a drastic adjustment of the contractual relationship." *Boston Shipyard Corp. v. United States,* 10 Cl.Ct. 151, 157 (1986), *aff'd,* 818 F.2d 876 (Fed.Cir. 1987); *see DeVito v. United States,* 188 Ct.Cl. 979, 413 F.2d 1147 (1969) (describing default termination as a species of "forfeiture" with serious consequences for the contractor). As such, a default termination is properly imposed only on the basis of "solid evidence." *Mega Constr. Co., Inc. v. United States,* 29 Fed.Cl. 396, 414 (1993) (citing *J.D. Hedin,* 408 F.2d at 431). Nonetheless, it is indisputable that, under certain circumstances, the government has the right to terminate a contract for default. *Clay Bernard Sys. Int'l, Ltd. v. United States,* 22 Cl.Ct. 804, 810 (1991).

The Contract Disputes Act explicitly provides for "de novo" review of a contracting officer's decision, 41 U.S.C. § 609(a)(3), and states that the contracting officer's factual findings "are not binding in any subsequent proceeding." 41 U.S.C. § 605(a).

A decision by a contracting officer terminating a contract is a government claim within the meaning of 41 U.S.C. § 605(a)

(i.e., a claim "by the government against a contractor"), and consequently "the government bears the burden of proof on the issue of the correctness of its actions in terminating a contractor for default." *Lisbon Contractors, Inc. v. United States*, 828 F.2d 759, 764 (Fed.Cir. 1987) (citations omitted). Thus, the government bears the burden of proof on its claim of default, even though the contractor is requesting conversion to termination for convenience. *Id.* Defendant must prove by a preponderance of the evidence that the default termination was justified. *Id.* at 765. Moreover, a default termination, as a drastic sanction, "should be imposed (or sustained) only for good grounds and on solid evidence." *Id.* at 765 (quoting *J. D. Hedin*, 187 Ct.Cl. at 57, 408 F.2d at 431).

1.

We first examine defendant's justification for the default termination. One month before default termination, premised in part on the financial status of the contractor, the parties met to discuss Amertex's financial condition. DX-3214. At the December 7, 1988 meeting, plaintiff submitted a certified claim for $33 million for government-caused delays.[97] At that time, plaintiff also indicated that it had a current negative cash position of $2.8 million, and that it had a cash requirement of $19.2 million beyond the funds on the contract to complete the contract. DX-3214; Tr. 712, 739 (L. Jacobson).

By that time, the contract price had been adjusted for the final definitization of P1 and P2 to a total of $109.3 million.

97. That claim did not include pending arbitrations involving two subcontractors; the arbitration awards of about $1.3 million were included in a revised claim. The revised claim also included other costs not submitted in December. Amertex had not certified any of the previous claims it had submitted. PX-329.

Amertex had delivered almost a million chempro suits and had an unliquidated progress payment balance of about $49 million. DX-3345; DX-3396. Amertex also submitted a cash-flow statement showing that it had about $8.5 million in payments due in December and an additional $1.5 million due in January.[98] Amertex requested that the delay claim be promptly evaluated and provisionally funded. The government indicated that it would make an expedited review of the claim and provide a preliminary assessment within 30 days.

On December 12, 1988, defendant issued a "cure notice" advising Amertex that, based on the financial information provided five days earlier, the company did not "possess adequate financial resources to complete performance of [the] contract . . . especially in light of indebtedness to Gentex, Inc. and Banco Popular . . . . " DX-3215. The contract included a "Default Clause," which allowed default based on failure to "make progress so as to endanger performance of this contract." DX-2002; 48 C.F.R. § 52.249-8(a)(1)(ii) (1984). That clause also required the contracting officer to give written notice and an opportunity to cure. 48 C.F.R. § 52.249-8(a)(2) (1984). Accordingly, Amertex was allowed ten days to provide a financial analysis describing Amertex's plan to complete the contract.[99] The notice also specifically advised that "[u]nless

98. Tr. 5221-23 (Panzera). Amertex had apparently indicated that the bulk of the $8.5 million figure was about $3.8 million owed to Gentex on its accounts receivable and $3.2 million owed to Banco Popular, in addition to regular operating expenses for the month of December. Amertex's total debt to the bank was in excess of $4.5 million. Plaintiff had already committed most of the company's equity, or retained earnings, to finance the extra costs of performance.

99. DX-3215. At trial, Amertex contested the sufficiency of the cure notice based on a distinction between the cure notice's usage of the phrase

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you are able to present evidence of your ability to cure this problem . . . the [g]overnment may terminate for default." *Id.* Amertex received the notice on December 19, 1988. DX-3232.

On the same day the cure notice was written, Amertex wrote to Captain Frederick Jaffin of the DPSC, reiterating Amertex's position that the government delays had caused the contract to be in a "loss position." DX-3217. Leo Jacobson stated that Amertex was closing for its regular three week holiday and that "[w]ithout an immediate influx of some $2.8 million I do not know how we will be able to re-open." *Id.* He also indicated that the overdraft at Banco Popular had reached $930,000 and that expenses related to vacation pay had to be paid or he would have no employees after the start of the year. *Id.* Jaffin and Jacobson spoke about the situation on December 16, and Jacobson sent a second letter to Captain Jaffin on December 19 advising that "[t]he only way I will be able to re-open on January 9th . . . and continue with production is with an influx of new money." DX-3229 (noting also that unless the government honored the outstanding progress payment request, it would be impossible to re-open after the holiday).

On December 19, 1988, the contracting officer, Patricia

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"inability to complete" performance and the default termination's usage of the phrase "inability to continue performance to completion." We are unpersuaded that, in the context of the financial situation in this case, any differences in meaning between the phrases are of consequence. *See International Verbatim Reporters, Inc. v. United States*, 9 Cl.Ct. 710, 721 (1986) (stating that notice must use sufficient particularity but need not cite each and every failure) (citing *Finast Metal Prods., Inc.*, 77-1 BCA ¶ 12,331 at 59,616 (1977) (stating that when the performance problems are well known by the parties, the contractor cannot claim prejudice by the government's failure to provide great detail)).

Panzera, wrote to Amertex stating that several deficiencies were found in the delay claim. DX-3228. The government objected to Amertex's total cost method for computing delay damages; Panzera also noted disagreements with certain costs and methodology. Additionally, she disputed that all of the delay was attributable to the government. Further, the contracting officer indicated a need for 60 days to evaluate the claim.

Three days after receipt of the cure notice regarding its financial condition, Amertex responded to the letter threatening default termination for financial inability. DX-3232. Amertex apparently was not aware at that time of the government's interim critique of its delay claim. In response to the threatened termination, Amertex maintained that under P37, as long as Amertex continued to make deliveries on the contract, its financial condition could not constitute a material default.[100] Amertex also asserted that defendant lacked the power to terminate for default if the government was the root cause of the alleged default and that such was the case. Amertex did note that by its own projections there was a "$19 million shortfall for contract completion." However, plaintiff observed that damages for the government delays totalled $33 million. Therefore, Amertex responded, the government's decision on the delay claim will determine Amertex's ability to complete the contract.[101] Thus, plaintiff insisted that it would be unable to

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100. P37, as modified by P41, ended the progress payment arrangement for reimbursement of incurred costs and substituted DD250s which paid Amertex for completed units. Under those bilateral agreements, Amertex was to be paid at a specified rate per unit, less 5% if the company delivered less than 70,000 units per month.

101. Amertex also had an outstanding certified claim for $3.9 million on the P1 and P2 shortfall. That claim had been submitted on October 27, 1988. On December 28, 1988, the government denied that claim in its entirety. DX-3243.

adequately respond with a detailed plan before it had a provisional decision on the delay claim. However, Amertex further insisted that it intended to continue on to completion.

On December 21, 1988, plaintiff responded with particularity to each of the government's criticisms of the delay claim. DX-3233. Amertex replied that the claim was on a "modified" total cost basis and that plaintiff had made adjustments to the base claim for excess costs for which the company was responsible. Amertex indicated that the government was incorrect on some of the discrepancies and that plaintiff had provided corrected copies relating to some of the issues at the December 7 meeting. Amertex also responded to the contracting officer's criticism of methodology. Plaintiff also responded in detail to the government's contention that certain delays relating to the specifications were not defendant's fault.[102] Amertex concluded by professing that "[w]ithout an interim decision we may not be alive at the end of [the] 60 day" extension requested by Panzera. DX-3233.

On December 30, 1988, two days after the government rejected Amertex's final claim for an additional $3.9 million based on the P1 and P2 changes, government personnel contacted the bank regarding the $33 million delay claim adjustment. Defendant's agents noted that they had told Amertex that "the claim had some merit." PX-219. They told the bank that "there appears to be some [g]overnment delay, but that a net value for that delay had not been established" and that the government was working toward a January 6, 1989 interim response. PX-219.

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102. Plaintiff specifically addressed the First Article and specification issues concerning which we have found substantial support for the proposition delay was government caused.

In the meantime, the government was evaluating the delay claim. On January 6, 1989, defendant issued a decision on the $33 million delay and disruption claim, finding entitlement to $1,887,744 due to government caused delays. DX-3252. In that decision, Panzera concluded that there were 1,156 delay days during a 1,400 day performance period.[103]

As a direct result of finding entitlement to only $1.8 million, the contracting officer terminated the contract for default. Because she understood that Amertex needed at least $2.8 million to re-open in January, she concluded that the contract should be default terminated. Tr. 5250 (Panzera); *see* DX-3217. At trial, the contracting officer emphasized that the $8.5 million in debt outstanding, combined with Amertex's desperate pleas for new money on the contract, also influenced her decision. *Id.*

The contracting officer testified that she believed that Amertex's financial condition had not been cured by the equitable adjustment and that the company had indicated no outside source of funding. DX-5251. Therefore, Panzera concluded that Amertex "did not have the financial ability to continue . . . to completion," thereby endangering performance. DX-5256. The contracting officer further testified that she chose not to authorize the release of $1.8 million to see if Amertex could use the funds to negotiate extensions with creditors, because she was concerned about the potential for a bankruptcy proceeding tying up the inventory.[104]

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103. The performance period actually covered 1,411 days. As discussed earlier, we conclude that there were 952 delay days.

104. Tr. 5296-97. Plaintiff had previously indicated no other source of funding and had been turned down by a government development bank

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Accordingly, the contracting officer terminated the contractor for default. However, in the termination decision, which was issued as modification P43, the contracting officer based the default termination on two grounds: "failure to deliver" and "failure to make progress, so as to endanger performance." DX-2002; DX-3256. We take up these two grounds in turn.

a.

By the time of default termination, plaintiff had delivered a total of 1,020,790 units against a delivery schedule requiring 1,065,865 chempro suits by December 31, 1988; this left a "shortfall" of 41,075 suits. DX-2002 (P37); PX-207. Thus, plaintiff was technically in default. Amertex disputes that it was in default and, alternatively, claims waiver by the government.

The contract's default clause did not require written notice and an opportunity to cure for failure to make deliveries. 48 C.F.R. § 52.249-8(a)(1)(i) (1984). However, the circumstances here appear to fall clearly within the rule enunciated by the Court of Claims in the *DeVito* case:

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in the preceding six months, and its financial condition had only worsened since then. Further, we are convinced that $1.8 million would not have made a significant difference. Considering the loss position of the contract, the award probably would not have been paid to plaintiff as a lump sum, but rather would simply have been added to the contract price, resulting in an insignificant increase to the per-unit price then paid for delivered suits.

Additionally, the contracting officer's fear of a bankruptcy filing was not unfounded under the facts of this case or the current legal regime. *See, generally,* Scott E. Ransick, *Adverse Impact of the Federal Bankruptcy Law on the Government's Rights in Relationship to the Contractor in Default,* 124 Mil. L. Rev. 125 (1989)

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> Where the Government elects to permit a delinquent contractor to continue performance past a due date, it surrenders its alternative and inconsistent right under the Default clause to terminate, assuming the contractor has not abandoned performance and a reasonable time has expired for a termination notice to be given.

DeVito, 188 Ct.Cl. at 990, 413 F.2d at 1153. The court specified that for plaintiff to show waiver by defendant, the contractor must demonstrate that defendant failed to terminate the contract a reasonable time after default under circumstances indicating forbearance and that the contractor relied on that failure and continued performance with the government's knowledge. 188 Ct.Cl. at 991, 413 F.2d at 1154. Plaintiff contends, and we find, that both conditions are established here.

First, throughout almost the entire life of the chempro suit contract (with the exception of the September 1987 cure letter), defendant did not enforce the contractual delivery schedules. Second, the "delivery delinquency" after the P37 modification of the delivery schedule developed in October 1988 when Amertex was short about 40,000 suits. Amertex was not terminated until 67 days later for about the same shortfall. Plaintiff had not "abandoned performance"; on the contrary, plaintiff increased the rate of deliveries per month even though the amount of shortfall over the two months remained about the same. There is no firm rule for what constitutes a "reasonable time" to terminate after a failure to meet a delivery schedule, but under the circumstances here, such a time-lag does not appear to be reasonable.

In such a situation, so long as the constructive

> election not to terminate continues, and the contractor proceeds with performance, the proper way for time to again become of the essence is for the Government to issue a notice under the default clause setting a specific time for performance.

Boston Shipyard, 10 Cl.Ct. at 159 (citing *DeVito*, 413 F.2d at 1154). Although the presence of an incremental delivery schedule would seem to indicate that the right to terminate renews at each increment, we note that the incremental delivery schedule here was truly atypical. The modification set a delivery schedule with monthly quantities of about 100,000 chempro suits, but the modification also provided that in the case of deliveries of less than 70,000 units per month, plaintiff would earn 5% less per suit on the DD250s. Accordingly, we are not convinced that termination based on the delivery shortfall occurred within a reasonable time after the delinquency. Even defendant concedes that modification P37 contemplated that plaintiff might not meet the delivery schedule therein. II Def.'s Reply to P.'s Response to Def.'s Post-Trial Br. 149 (1994).

This is especially so in light of clear evidence indicating defendant's waiver of any residual right to default terminate the contract based on failure to meet the delivery schedule. The record is clear that defendant strongly encouraged plaintiff to keep delivering, even after the cure notice based on financial inability. Captain Jaffin (Chief of Contract and Production Division, Defense Logistic Agency, Defense Personnel Support Center) told plaintiff's president that a letter forthcoming after the December 7 meeting would be "just a formality" and that he should just answer it and keep shipping. Tr. 500. The cure letter did not mention the delivery shortfall, whereas the one other cure letter on the contract, issued the preceding year, was

premised on failure to meet a delivery deadline. Thus, several aspects of the government's conduct seem to establish an intention to forbear from terminating based on the delivery shortfall in late 1988. Under the facts of this case, we find waiver. *See H. N. Bailey & Associates v. United States,* 196 Ct.Cl. 156, 181-82, 449 F.2d 387 (1971).

Amertex's reliance on this forbearance also weighs in our consideration. Amertex continued to run up expenses in excess of $2 million per month attempting to increase deliveries. The bank, integrally involved in the parties' financial negotiations, continued to allow overdrafts to cover those costs. The Court of Claims has refined this reliance test to require plaintiffs to prove tangible or "productive performance." *Pelliccia v. United States,* 208 Ct.Cl. 278, 292, 525 F.2d 1035, 1043 (1975). Amertex delivered about 150,000 chempro suits in the intervening period, including delivery of 87,000 suits in December and additional deliveries the day before the default termination was issued.

Defendant responds that it did nothing more than urge plaintiff to do what it was required to do under the contract. However, the reliance rule stands for the proposition that the government "cannot allow an unwary contractor to continue performance and thus incur large expenses, all of which the government will refuse to reimburse if and when it decides to cancel the contract on the grounds of the violation." *Acme Process Equip. Co. v. United States,* 171 Ct.Cl. 324, 336, 347 F.2d 509, 516 (1965), *rev'd on other grounds,* 385 U.S. 138 (1966). In sum, we conclude that default termination based on failure to deliver was not justified on the date of termination.[105]

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105. Moreover, even if the law precluded proof of waiver, plaintiff provided facts sufficient to excuse the delivery default. First, the erroneous QDR relating to bursting barrier bags shut down Gentex's production at

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However, the failure to deliver was not the primary issue. The nucleus of the default termination was financial inability, and, as the following section shows, defendant has proved that default termination was justified on that ground.

b.

1)

As with the first ground for default, the government bears the burden of proving that plaintiff's conduct or condition actually endangered performance. *Hannon Elec. Co. v. United States,* 31 Fed.Cl. 135, 143 (1994), *aff'd,* 52 F.3d 343 (Fed.Cir. 1995). Here, defendant had ample evidence, often in the form of admissions, that plaintiff's dire financial situation was endangering performance. *See Discount Co. v. United States,* 213 Ct.Cl. 567, 575, 554 F.2d 435, 441, *cert. denied,* 434 U.S. 938 (1977). Absolute impossibility of performance is not required before the government may declare a contract in default. *Lisbon,* 828 F.2d at 765. Instead, the essence of the test is the "reasonable likelihood" that the contractor could perform the

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a time when the subcontractor was packing about 6,000 chempro suits per day. PX-1265; PX-1266; PX-1267; PX-1268. The bursting barrier bag problem was due to a specification inadequacy. DX-3206. Plaintiff also established the way in which the poly bag problem was hampering packing.

Additionally, plaintiff notes that it had 67,000 units that had been rejected by defendant for failing carbon tetrachloride testing due to thread tension. PX-197. These units alone would have covered the shortfall. Subsequently, Natick determined that the suits could be accepted for training. PX-211. However, Amertex had already been terminated by that time. *See Radiation Technology, Inc. v. United States,* 177 Ct.Cl. 227, 366 F.2d 1003 (1966) (noting the need for additional time to correct a delivery under the substantial compliance doctrine).

entire contract effort within the time remaining. *Id.* The same principle applies to funding.

Applying the reasonable likelihood approach to the facts of this case convinces us that defendant has met its burden of proof that the default termination was justified. Plaintiff acknowledged that there was a $19 million shortfall between the contract price and cost to complete. It is beyond dispute that Amertex was carrying a heavy debt-load which grew worse with each passing month.

Indeed, the company president's own words describe the financial misfortune that was befalling the contractor: "Amertex is bleeding to death slowly even with passing [test] results [for the DD250 payments]." DX-3173. Time and again in those last few months, the contractor emphasized that without an entitlement to re-open the progress payments and obtain a new influx of cash, Amertex was going to have to close its doors. *See supra* Part II.C.; *see also, Appeal of Shimato Constr. Co., Ltd.*, 61-1 BCA 2995, ASBCA No. 5513 (A.S.B.C.A., Mar. 28, 1961) (describing endangering contract performance in a financial inability context, such as plant closings, layoffs, payment problems). Defendant has established plaintiff's poor financial condition; plaintiff could hardly deny it.

Yet, allowing the government to refuse to fund merely because a contractor's financial condition was suspect would, all too often, be a self-fulfilling prophecy.[106] The reasonable likelihood standard appears to balance the competing needs of both parties under such circumstances. Here, it is especially helpful.

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106. *See* James F. Nagel, *Financial Inability in Government Contracts*, 17 Pub. Cont. L.J. 320, 337 (1987).

Appendix C

In our resolution of the delay and disruption claim we have found that the appropriate equitable adjustment for the delay and disruption solely attributable to the government is $10,071,617. Such a large amount relative to the contracting officer's figure raises the question of whether a $10 million price adjustment would have made a difference, even if $1.8 million would not. Yet, the definitizing of an equitable adjustment even for the larger sum would not have resulted in a lump sum cash payment to plaintiff and would probably not have renewed the progress payment method of reimbursement. The contract still would have been in a loss position to the extent of $9 million and the unliquidated progress payment amount still would have been substantial. Just as the definitization of P1 and P2 at $12 million did not reopen the progress payments because the contract remained in a loss position, definitization of the delay claim in the amount we find due would not have changed the per-unit method of payment. *See* 48 C.F.R. §§ 52.232-16 (c)(5). Defendant had no contractual obligation to increase its financial exposure in context of such a loss.

Moreover, the fact that plaintiff had agreed to the DD250 system, receiving payment for goods produced rather than costs incurred, had already distorted the production process. Amertex's poor financial condition necessitated the near shutdown of the top-half of the production process in order to focus on operations that provided cash. Amertex would have had to build-up production again, causing more delay and extending performance into even later and most likely more expensive periods.

Indeed, during the last year of performance, several subcontractors had sought to renegotiate payment arrangements due to the extensive delays. Additionally, Amertex was having difficulties obtaining and retaining materials suppliers. Even

plaintiff's own expert recognized the dire production situation during the last few months of the contract:

> [B]ecause of the change in payment method, many of the change[s] in operations are pretty close to the line of balance, but on the [cutting] side . . . it has fallen considerably behind, because of the lack of ability to get material. It looks like the whole infrastructure of the contractor is falling apart.

Tr-4014 (Pandya). Under such circumstances, combined with plaintiff's warnings that production would literally cease without an influx of cash, plaintiff's subjective intent to perform cannot prevail over the reasonable likelihood that plaintiff was not going to be able to perform the contract within the funds and time available.

2)

Having found that default was justified based on the endangering performance ground, we turn to whether plaintiff has a valid defense of excuse. As the Federal Circuit has stated:

> It is well-established that the poor financial condition or insolvency of a contractor ordinarily is not a sufficient excuse for a contractor's default in the performance of a contract. However, when the financial incapacity of the contractor to perform is caused by the acts or omissions of the government, the default is excused . . . .

TGC Contracting Corp. v. United States, 736 F.2d 1512, 1515 (Fed.Cir. 1984) (citations omitted). In order for plaintiff to be excused from the default established, Amertex would have to show that improper government acts were the primary or controlling cause of plaintiff's default. *Id.* (citing *Appeal of R.C. Hudson & Associates., Inc.*, 76-2 BCA 12,201, ASBCA No. 20,711 (A.S.B.C.A., Oct. 26, 1976)).

In the case at bar, the defective specifications, testing, and inspection problems caused plaintiff severe production difficulties. The government's extremely tardy definitization of the P1 and P2 changes surely aggravated the financial problems developing as a result of delay. However, not all of the financial problems caused by the delay and disruption are attributable to the government. Indeed, there was much concurrent causation in this case, despite the fact that defendant was solely responsible for a significant portion of the delay and disruption.

Plaintiff emphasizes that it was a successful government contractor before this procurement, that it had efficiently produced hundreds of thousands of clothing items, and that it had even presented several accepted value engineering change proposals. In this sense, Amertex in essence urges the court to excuse plaintiff's financial condition endangering performance using a "but-for" approach (i.e., but for the government-caused financial problems, the company would have been able to continue performance.) *See Bristol Elec. Corp*, 84-3 BCA at 17,543, *reconsid. denied* 85-1 BCA at 17,821. Yet, considering the magnitude of the loss on the contract and plaintiff's role in that loss, Amertex has not established that but for the government's acts, plaintiff would have remained solvent and had sufficient cash flow to perform the contract to completion with the funds and time available. It is important to keep in mind that the government had made progress payments totalling

in excess of $88 million before the contract was determined to be in a loss position, and had made a combination of progress and DD250 payments in excess of $95 million as of date of termination.

Even with the $10 million equitable adjustment for delay and disruption attributable solely to defendant, the contract was still in a loss position, and a large amount of unliquidated progress payments would have remained. Moreover, we have seen no good explanation for plaintiff waiting until it was on the brink of financial disaster before presenting its certified delay claim. The December claim, if successful, would have provided a thirty percent increase in the contract price for defendant's delay and disruption. For these reasons, we find that plaintiff has neither refuted nor excused its default under the contract based on financial inability endangering performance.

3)

The remaining issue concerning the default termination based on financial ability endangering performance is whether defendant waived that ground by not acting sooner. Plaintiff presented evidence that some of defendant's contracting agencies estimated that the contract was in a loss position more than a year before the default termination.[107] In fact, Amertex met with government officers shortly after its bankruptcy filing in October 1987 to discuss Amertex's lack of liquidity. Plaintiff notes that no cure notice issued then or within a year thereafter.

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107. Several times in the 14 months preceding termination, defendant calculated the loss on the contract and prepared tables comparing the financial effect of terminating for default versus terminating for convenience versus continuing. *See, e.g.*, PX-182 (opining that by continuing progress payments, the government increases its exposure and "postpones [Amertex's] seemingly inevitable collapse").

Appendix C

Case law provides that a decision to terminate must be made within a reasonable time after the government gains knowledge of "relevant facts." *See Ling-Temco-Vought, Inc. v. United States,* 201 Ct.Cl. 135, 147, 475 F.2d 630, 637 (1973). What is a reasonable amount of time varies from case to case. Amertex makes a strong argument that it relied to its detriment on the government's apparent forbearance as plaintiff continued performance and incurred additional expenses in an effort to perform. There is no doubt that defendant was well aware of plaintiff's serious liquidity problems.

However, the key question is whether the "relevant facts" are a poor financial condition or a financial crisis so severe that performance was endangered. We believe the key facts are the latter ones. There can be no doubt that plaintiff's financial situation grew worse each month of the last year of performance. After cessation of progress payments due to the loss position, plaintiff agreed to the restructuring of the payment plan in July 1987 through modification P37.[108]

The cash shortage that resulted from the fact that the company was no longer being reimbursed for incurred expenses only aggravated an already poor cash flow situation. By December 1988, plaintiff's poor financial condition can reasonably be said to have constituted a significant threat endangering performance. We need not be precise about the point in time near the December 12 cure notice at which the contractor's financial health became terminal. Plaintiff's own pleas speak to the fact that by December, plaintiff needed

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108. We are unpersuaded by plaintiff's suggestion that defendant's withholding of progress payment number 36 until the signing of the bilateral modification vitiates plaintiff's consent to the agreement or constitutes "duress."

additional cash funding to avoid a shut down. Accordingly, we are not persuaded that defendant waived its right to terminate on the ground of financial inability endangering performance. Defendant acted promptly following the December 7 summit meeting at which the depth of the financial crisis became unquestionably clear to all of the parties involved in the Amertex chempro contract.

We find that the default termination based on financial inability endangering performance was justified. Accordingly, we cannot convert the default termination into a termination for the convenience of the government. Consequently, we deny Amertex's claim for termination of convenience costs.

D. Progress Payments and Offset

Defendant seeks return of the unliquidated progress payments made to Amertex on the chempro contract. After default termination, the government attempted to mitigate its damages regarding the large gap between the amount of progress payments advanced and the contract price of the quantity of garments delivered. On May 24, 1991, the contracting officer issued a finding that Amertex was indebted to the government for unliquidated progress payments in the amount of about $26 million. DX-2093. Subsequently, defendant filed a counterclaim in this litigation for the return of unliquidated progress payments.

The parties do not dispute the basic amount of progress payments unliquidated by deliveries, but they disagree about defendant's mitigation of damages. There is only one significant issue relating to mitigation outstanding and that relates to the value of nearly a million pounds of inventory which was not sold until two years after termination. In the succeeding paragraphs, we set forth the calculation of unliquidated progress

payments, resolve the outstanding mitigation issue, and apply the offset to which plaintiff is entitled for the equitable adjustment for delay and disruption.

1. Unliquidated Progress Payment Unadjusted

Defendant has established the accuracy of the figures used to calculate the unliquidated progress payment amount, with the exception of the remaining mitigation issue. At trial, the government recalculated the value of the unliquidated progress payments to be $20,038,649. The following table sets forth the general calculation of the progress payments outstanding, not including the $450,000 that the government allowed for the mitigation item in controversy:

Table 7: Unliquidated Progress Payments

Total Progress Payments	$88,566,214
Total DD250 Payments	+ 6,955,066
Total Payments Received	$95,521,280
Net Price for Delivered	(45,955,829)
Unliquidated Progress Payments before Mitigation	$49,565,451
Total Inventory Mitigation (except 900,000 lbs material)	(29,706,814)
Subtotal Unliquidated	$19,858,638

Gov't Costs Protecting Work in Process	630,011
Unliquidated Progress Payments Unadjusted	$20,488,649

Def.'s Post-Trial Br., app. A.[109] Thus, the basic amount of the undisputed unliquidated progress payments is $20,488,649.

2. Mitigation of the 900,000 Pounds of Material

The parties disagree by about $14 million regarding the mitigation of 900,000 pounds of materials. Immediately following default termination, defendant notified Amertex and its subcontractors that any legal rights vesting title in Amertex concurrently vested title in the government. DX-3274. Both Banco Popular and Gentex disputed defendant's title to certain property involved in the chempro contract because they had purchased some items without reimbursement by the government; hence, these entities were also creditors of Amertex.[110] The government mitigated the value of most of the work-in-process inventory by entering various contracts to convert the unfinished goods into completed chempro suits. With respect to the remaining inventory, the government eventually solicited bids for the sale of the 900,000 pounds of materials

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109. The work in process mitigation figure includes the total inventory mitigated by DPSC, the value of Gentex termination inventory, the value of the Duro termination inventory, and the price of the material purchased by Archer Rubber.

110. Gentex eventually agreed to a $4,302,910 settlement of the inventory value. Gentex's subcontractor, the supplier Duro, also agreed to a settlement for inventory in the amount of $1,063,931. These amounts are included in the mitigation total shown in Table 6, *supra*.

that could not readily be converted into finished chemical protective suits. On September 10, 1991, the government sold that inventory for $450,000.

Plaintiff contends that this amount was not a reasonable mitigation of almost a million pounds worth of inventory. In particular, Amertex contends that the government failed to act promptly to protect and sell the inventory and the value diminished drastically as a result. Defendant argues that the process of valuing inventory was delayed due to the bank's assertion of a superior claim to some of the inventory in the contract. DX-3270; DX-3287; DX-3288. The government also maintains that the reasonable value of the inventory for purposes of mitigation is "the range of prices that a successor contractor acquiring these materials would reasonably be willing to pay the Government." *Appeal of Uni-Systems, Inc.*, 84-2 BCA 17,292, 86,135, ASBCA No. 25,066 (A.S.B.C.A., Mar. 16, 1984). Therefore, defendant contends that the circumstances of this case establish the reasonableness of its mitigation of this inventory.

The original solicitation of bids for the 900,000 pounds of inventory was cancelled after the government determined that the bids were too low. The unsuccessful bidder filed a protest and eventually settled the claim by purchasing the material for $450,000. *Arthur Forman Enters., Inc. v. United States*, 22 Cl.Ct. 816, *vacated*, 960 F.2d 154 (Fed.Cir. 1991). Thus, the government gave Amertex a credit against the unliquidated progress payments claim for the "scrap value" of the material that was not converted into chempro suits.

Amertex argues that it "is entitled to have the fair value of the [inventory] credited against its liability." *Appeal of Fairfield Machine Co.*, 85-2 BCA 17,969 at 90,087, ASBCA No. 22,704

(A.S.B.C.A., Feb. 28, 1985). Plaintiff contends that the government acted unreasonably by failing to act promptly to preserve the inventory and solicit buyers. The delay was especially significant because some of the material, such as lining cloth, had a limited shelf life. Therefore, Amertex contends that defendant acted unreasonably in waiting two years to sell the inventory and that plaintiff was denied its fair value as a consequence.

There was a dispute over rights to the inventory in early 1989, DX-3270, which was resolved on April 28, 1989, DX-3297. Five days later, Amertex provided the government with inventory sheets describing the property and its location. DX-3291; Tr. 4940 (Key). On June 13, 1989, plaintiff wrote a letter regarding the consolidation of the inventory, stressing that "it is of vital importance to have the [t]ermination [i]nventories under the [g]overnment control as soon as possible . . . ." DX-3295. The government did not award a contract for moving the inventory until June 23, 1989, and the work commenced on July 5. DX-3296.

In June 1989, Robert Tarr of DCASR-Atlanta commented that "DPSC seems to be interested in only finished goods at this time. It appears we may have some high priced scrap on our hands." PX-229. Yet, during the same period, Major Paul Dronka, in an internal government memorandum, stated: "Every action is being taken to preserve the integrity of the inventory from degradation." DX-3296. A government employee testified that the condition of the inventory remained essentially the same between June 1989 and 1991: "It was a mess. There was no electricity in the warehouse . . . . The material was stacked haphazardly, and some of it was on the floor . . . . It . . . looked like the old game of pick-[up]-sticks." Tr. 8231-34 (Hepner). Thus, although there is a serious question about the condition

of the inventory at the time Amertex surrendered possession, the government apparently did not take "every action" to preserve the inventory in order to mitigate its claim by the full value of the material.

By August 1990, an agent of the government in Puerto Rico wrote to Tarr in Atlanta advising of the disparity among the various branches of the government in mitigating the partially completed inventory versus the raw materials:

> Whereas we are making progress toward disposal of the inventory, it has been progressing much too slowly. DPSC [has] taken too long to make decisions and put decisions into effect.
>
> . . . .
>
> [Recommendation:] communicate to DPSC[ ] the urgency of a decision regarding the disposal of inventory (trim, cut goods, and rolled material) located at Caguas I [in Puerto Rico].

PX-232. In September 1990, almost 20 months after default termination and approximately 15 months after obtaining possession, defendant solicited bids for the 900,000 pounds of materials. At that time, the highest bid was $600,000. The government considered this amount to be too low. In the January 1991 solicitation, the highest bid had dropped to $276,000. Eventually, one firm paid $450,000 for the material; defendant contends that this is the fair market value and a reasonable mitigation of the massive quantity of the items.

Appendix C

Plaintiff's assertion that the residual inventory is properly valued at $14 million is untenable. Plaintiff based this valuation on the government's audit of inventory costs for raw materials, work in process, and miscellaneous items which set a cost of about $14 million. DX-3396 at 7. However, we are persuaded by the defendant's explanation that the value of the 900,000 pounds of material is not equivalent with the audit value because that figure included materials distributed among the contracts the government let after termination. Def's Reply to P's Resp. to Def's Post-Trial Br. at 96. The maximum cost excluding profit on the remaining audited inventory was $4.4 million. However, this figure is much too high to use to value the remains of a manufacturing operation being liquidated under distress-sale conditions.

Another method proffered to value the goods is an estimation of the cost of the various yardages of materials at issue. *See Appeal of Ameco Elec. Corp.*, 66-1 BCA 5614 at 26,238, ASBCA No. 9778 (A.S.B.C.A., May 31, 1966). Defendant offered a valuation of the nyco, butyl, and lining, using Amertex's standard unit prices, of $1,773,210. Def's Reply to P's Resp. to Def's Post-Trial Br. at 96. This figure does not include the value of labels, straps, buckles, thread, elastic, zippers, velcro tape, snaps and packing materials. *See* PX-358. However, this figure also seems excessive for mitigation purposes since it assumes like-new condition and the absence of a forced sale.

Because the defendant failed to sell the inventory promptly, the government should not be able to benefit from the uncertainty in value created by its own inaction. As the Board of Contract Appeals stated in a case in which the difficulty in valuation was precipitated by defendant's inaction:

> [T]he Government, on receipt of the shipment, had ample time to make an orderly inventory of what it received. Its failure to do so . . . must be weighed against it when considering what property it must pay for.

Appeal of Herlo Corp., 77-2 BCA 12,820, 62,412, ASBCA No. 19,198 (A.S.B.C.A., Sept. 30, 1977). We consider $450,000 to be too low a figure. Even the government considered $600,000 inadequate in September 1990.

However, because of the bank dispute, Amertex did not transfer the inventory for about six months, and we believe that the value of the lining dropped sharply during this time. *Cf.* Tr. 3498 (Goldberg). We consider $1.2 million to be a fair approximation of the value of the inventory in dispute in the summer of 1989 when the government took possession. On the basis of this finding, we adjust the unliquidated progress payments to $19,288,649 ($20,488,649 less $1,200,000).

3. Offset

We find that defendant is entitled to repayment of the adjusted unliquidated progress payment amount less the amount of plaintiff's equitable adjustment for delay and disruption attributable solely to the government. Accordingly, the net amount which plaintiff is indebted to defendant is $9,217,032 ($19,288,649 less $10,071,617).

III. Judgment and Order

Based on the foregoing it is ORDERED that judgment in

these three consolidated cases be entered in favor of defendant in the amount of $9,217,032.

Each party shall bear its own costs.

s/ James T. Turner
James T. Turner
Judge

Appendix C

SCHEDULES WHICH DISPLAY GRAPHICALLY AND IN DETAIL THE RESOLUTION OF PLAINTIFF'S MODIFIED TOTAL COST CLAIM FOR DELAY AND DISRUPTION & MODIFICATIONS P00001, P00002 AND P00037

(Omitted here but submitted separately as Lodging Appendix.)

APPENDIX D — ORDER OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DENYING COMBINED PETITION FOR REHEARING AND SUGGESTION FOR REHEARING *IN BANC* FILED MAY 2, 1997

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

96-5070

AMERTEX ENTERPRISES, LTD.,

Plaintiff-Appellant,

v.

THE UNITED STATES,

Defendant-Appellee,

ORDER

Appendix D

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

ORDER

A combined petition for rehearing and suggestion for rehearing in banc having been filed by the APPELLANT, and the petition for rehearing having been referred to the panel that heard the appeal, and thereafter the suggestion for rehearing in banc having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the suggestion for rehearing in banc be, and the same hereby is, DECLINED.

The mandate of the court will issue on May 9, 1997.

FOR THE COURT,
JAN HORBALY, CLERK

Dated: May 2, 1997

By s/ Brian P. LeDuc
Brian P. LeDuc
Associate Chief Deputy Clerk

cc: MARC LAMER
SHERYL L. FLOYD

Appendix D

AMERTEX ENTERPRISES LTD V US, 96-5070
(CFC – 90-684C)

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.